THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. XLVIII. SATURDAY, MARCH 6, 1886. No. 10.

ORIGINAL ARTICLES.

LAPAROTOMY IN THE TREATMENT OF PENETRATING WOUNDS AND VISCERAL INJURIES OF THE ABDOMEN.

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(Concluded from page 230.)

THE *second indication* for laparotomy is in penetrating pistolshot wounds of the abdomen.

The profession in this country is indebted to Dr. W. T. Bull for the first practical application of a new principle in the treatment of penetrating pistolshot wounds. His remarkable case is familiar to all, and a reference to it is made in this connection in order to give to him the credit which he justly deserves.

Lately, in this country and in Europe, there have been several successful cases, which afford valuable evidence as to the propriety of this plan of treatment.

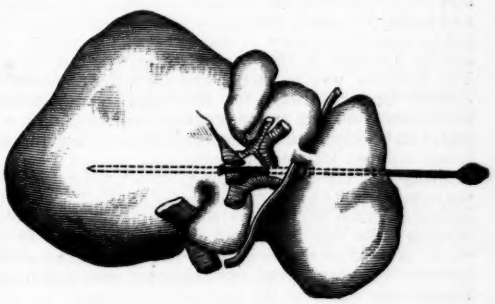
I have recently performed laparotomy in two cases of pistolshot wounds of the abdomen. The histories of these cases are as follows:

CASE XII.—M. R., æt. twenty-three, admitted to the Ninety-ninth Street Hospital, January, 1886. Patient was shot by a policeman with a 32 calibre ball. The wound was situated one inch below the sternum. A Nélaton's probe was introduced very carefully and under continuous irrigation of bichloride of mercury. Patient was in shock, and the fact that the bullet had entered the abdominal cavity led me to believe that the only chance of recovery was to open the peritoneal cavity. The median incision was made and the contents of the cavity carefully examined, wrapping each section of the intestine in towels wrung out with a warm solution of bichloride of mercury. During the examination a tremendous gush of blood appeared, and upon introducing my hand, thoroughly disinfected, at the time, into the bottom of the cavity, I felt a wound upon the under surface of the liver and my finger entered the transverse fissure. This was the source of the hemorrhage, and I mentioned this fact at the time to Dr. Messemer, the Coroner, and stated that the hemorrhage proceeded from the large veins in the transverse fissure. The hemorrhage filled the peritoneal cavity, which was cleansed of clots. There was no perforation of the intestine. The patient sank rapidly, and was almost pulseless. The wound was closed, the hemorrhage arrested by pressure as far as possible and stimulants administered.

The patient rallied a little, and finding his pulse very feeble I determined upon transfusion through the radial artery, which upon being completely divided did not bleed. The saline solution of Mikulicz was employed, which consisted of one litre of warm distilled water, in which were dissolved six grammes of chloride of sodium and one gramme of carbonate of sodium. Twelve ounces of this solution were transfused into the radial artery toward the heart, with marked effect. His pulse was, a few minutes after the transfusion, 130 per minute, and the patient seemed to rally. The canula was retained in the artery, and every four hours a fresh transfusion was made. His condition was greatly improved by the transfusion, and I began to feel that some hope might be indulged in as to his ultimate recovery, similar to another case of mine in which transfusion was employed in a secondary hemorrhage following a gunshot wound of the jaw, and in which recovery took place. In forty-eight hours after the operation, the patient died.

Autopsy made by Dr. Grauer in the presence of the coroners, January 5, 1886. Brain showed evidences of chronic meningitis as a result of alcoholism. The lungs were œdematous. The intestine *was not wounded.* The bullet entered the upper surface of the left lobe of the liver, and the track of the bullet as followed by a probe was downward and to the right. It traversed

FIG. 4.



Dotted line shows track of bullet, wounding vessels in transverse fissure; ball lodged in right lobe.

the transverse fissure of the liver and wounded the portal vein and other vessels in its passage through the substance of the liver. The bullet was found by Dr. Herold lodged in the lower part of the right lobe of the liver. There were evidences of the beginning of peritonitis and hepatitis, and many veins were also wounded in the liver tissue. There was some blood in the peritoneal cavity.

The remarks which I would offer in this case of pistolshot wound of the liver are these:

First. That while laparotomy did not save the patient, the operation did not hasten death; but prolonged life by temporarily arresting the hemorrhage.

Second. The diagnosis of the injury was made certain by the laparotomy, and while it was utterly impossible to expect a recovery under these conditions, the precise nature of the injury was diagnosticated, and the treatment was directed accordingly.

Third. The wound was a mortal one. There is no case which has ever recovered where the bullet passed through the centre of the liver, wounding small vessels in its substance, and large venous

trunks in the transverse fissure. Every surgeon knows how extremely fatal even peripheral injuries of the liver are, and how few have ever recovered. None have recovered with a central injury, which destroyed vessels in the interior of the organ and large veins in the fissure. It is impossible to believe that any injury involving the large vessels in the liver could be anything but an absolutely mortal wound.

CASE XIII.—Mrs. K. B., æt. twenty-six, admitted to Ninety-ninth Street Hospital, Jan. 10, 1886, suffering from pistolshot wound of abdomen. The ball, which was a 32 calibre (Colt's revolver), entered half an inch to the left of the umbilicus. Upon admission the patient was not in profound shock. Temp. 100°, pulse 112, resp. 24, and suffering but little pain in abdomen; pain is increased during deep inspiration. There was loss of hepatic flatness over region of liver. The urine contained no blood and was clear and normal. I proceeded at once to perform a laparotomy and the peritoneal cavity was opened, and there was present fecal extravasation. Seven openings were found, which were carefully sutured by the Lembert stitch, and one perforating wound of the mesentery. The abdominal cavity was filled with venous blood, and the hemorrhage from the deep-seated venous trunks was appalling. The amount of hemorrhage became so large and alarming and entirely beyond control, that it was thought expedient not to continue, in view of the fact that the patient was almost pulseless at the wrist and was evidently dying. The intestine was replaced, and its weight seemed to control the hemorrhage for the time. The abdomen was closed, and the patient contrary to expectation rallied, and by stimulation at intervals of every few minutes lived for about forty-eight hours.

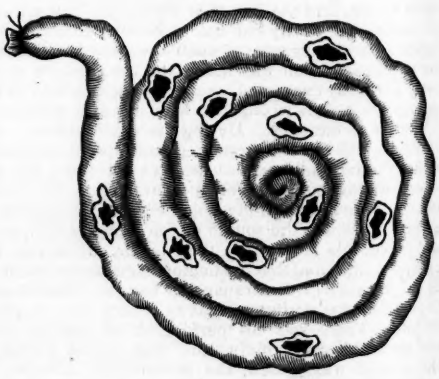
Autopsy. The seven openings were tightly closed by the sutures and no perforation in the gut had been overlooked. These wounds were water-tight. The bullet wounded the iliac veins and was found lodged in the psoas muscle in the vicinity of the promontory of the sacrum. The cavity of the abdomen was filled with blood.

Laparotomy in this case discovered the seven large perforations in the intestine. These were securely sutured, and no openings were overlooked. The operation also enabled the surgeon to remove the fecal matter from the peritoneal cavity. Thus far, the value of the operation is unquestioned; but the laparotomy did not render the arrest of the hemorrhage possible. Sponges and towels were simply buried in a pool of venous blood, the source of which could not be traced, owing to the repeated gushes of blood, which welled up from the pelvic cavity in a continuous and rapid stream. The bleeding veins could not be discovered, so rapid and great was the flow of blood from them. It seems to me, the great thing to be learned in laparotomy is a method of arresting the hemorrhage from such vessels as the vena cava, iliac veins, and the portal veins, and when this object is attained laparotomy will be attended with almost uniform and brilliant results.

It is fortunate that wounds of the large venous trunks seldom complicate the other visceral injuries. It was my misfortune to meet with two of these cases. The attention of the profession should be directed to this one point, and when a sure method is found which will control hemorrhage from the large veins, laparotomy, as an operation, will meet with unparalleled success. It would seem that some sort of mechanical pressure upon the vessels above near the diaphragm, and a tourniquet around each thigh, would save enough blood to prevent the patient from being exsanguinated while an attempt was made to secure the wounded veins down in the bottom of the peritoneal cavity. Until one has witnessed a hemorrhage such as I have described, he cannot appreciate the difficulties of the task, and in the future I shall endeavor to have in readiness some device to check temporarily such a hemorrhage, and some one whose entire attention is to be centred upon this one point during the operation. It is absolutely impossible to find a large venous trunk which is actually bleeding from the bottom of the peritoneal cavity and behind the peritoneum, unless some means is devised to arrest for a few seconds the torrents of blood which well up with such rapidity as to be in no way controlled by sponges or towels. Before the sponge can touch the spinal column to make pressure upon a large vein, the sponge is soaked with blood, and the hand is entirely buried out of sight in a pool of constantly rising blood, until the hemorrhage overflows the sides of the incision into the walls of the abdomen. Mechanical pressure, directly applied upon the vertebral column to arrest any arterial hemorrhage from the many branches of the aorta, and the application of a tourniquet to both thighs, may possibly control the bleeding sufficiently for a few moments until the surgeon can find the bleeding venous and arterial vessels.

CASE XIV.—J. McA., admitted to Bellevue Hospital September 26, 1885, was accidentally shot. Upon his admission that same day at 2 P. M., patient was almost pulseless, cold and pale. Stimulants were employed,

FIG. 5.



The ileum, showing ten perforations.

and patient, at 5 P. M., had a fairly good pulse; skin moist; pain less. In the evening, pulse 130, temperature 102° F., and abdomen slightly tympanitic. At 10 P. M. patient's condition slightly improved. Sept. 27 patient's condition still better, and his condition remained so until late in the evening, when pulse became very feeble and rapid, tympanites increased, hepatic

flatness lost, and friction, fremitus, and murmur could be heard over liver. Patient sank rapidly during the evening, and expired about midnight.

Autopsy. Made by Dr. Pinkerton. Wound was situated one inch to the right of the external border of right rectus muscle, and opposite to a point on a level with the anterior superior spinous process. Peritoneal cavity filled with gas; the intestine was congested, agglutinated with lymph, and there was a quart of bloody serum in the cavity. No fecal extravasation was found. There were ten perforations, which were observed in three distinct groups, each group occupying about ten inches of intestine. The gut was contused and ecchymotic about the wounds, and the mesentery was injured at several points. The bullet had perforated the mesentery at one place only, and was found in the tissues between the rectum and the promontory of the sacrum, a little to the left of the median line.

The remarks that seem pertinent in reflecting upon this case of penetrating pistolshot wound of the abdomen, in which there were ten wounds of the intestine, are these:

First. Failure to perform a laparotomy deprived the patient of the only possible chance of recovery.

Second. If laparotomy had been performed, it is reasonable to believe that life might have been saved, because no fecal extravasation had occurred into the cavity, though it was filled with gas, and because no hemorrhage had occurred.

Third. Absence of positive symptoms of wound of intestine until shortly before death led to error as to the precise nature, extent, and character of the injury.

Fourth. Symptoms cannot be relied upon as an unerring guide in diagnosis. They may be almost entirely absent, and yet many perforations exist.

Fifth. The continual improvement in the patient up to within a few hours of death was misleading in this case.

Sixth. Since negative symptoms will not exclude injury of the viscera, the exploratory laparotomy in doubtful cases is justifiable on the ground that the operation is performed with little additional risk, and a failure to do so may result in death.

Seventh. The light thrown upon this subject, from a study of this particular case and of others, led me to a conviction of the right of the surgeon to interfere by laparotomy.

A case which I saw, and which was under the care of Dr. Charles Phelps, the history of which has been kindly prepared for me by Dr. Conway, the House Surgeon in Bellevue Hospital, illustrates the danger of refusing to operate.

CASE XV.—C. C., æt. twenty-five, admitted to Bellevue Hospital September 9, 1884. Patient was shot by her husband. After the shooting she was able to walk into an adjoining room. Upon admission patient was in great shock, and a bullet wound was discovered near the umbilicus. Stimulants and morphia were administered and the wound dressed antiseptically. The patient developed peritonitis, and died in about seventy-two hours.

Autopsy. The bullet had wounded the sigmoid flexure, and was flattened by striking the bone. The bullet then dropped into the pelvis. The cavity of the peritoneum contained gas and feces, and the membrane itself shown signs of acute peritonitis. There were only two small openings in the gut made by a bullet (22 calibre).

This case is another one which illustrates the value of laparotomy. In the absence of any hemorrhage the two perforations could have been easily discovered and closed, the peritoneal cavity sponged out, and the median incision sutured.

The following surgeons have published successful cases of penetrating pistolshot wounds where either a true laparotomy was performed or the original wound was enlarged, the perforations sutured and the cavity sponged:

Kocher,	(stomach)—recovery	1
Bull,	one case "	1
Ramsay,	" " "	1
Legouest,	two cases—recoveries	2
Hamilton,	one case—recovery	1
Smartt,	" " "	1
Total		7

There are, of course, other cases, but these seven cases have been found in recent medical journals. The list does not include my two cases, because they were both fatal from hemorrhage. I have omitted to mention those cases in the above list where a laparotomy was performed and the cases terminated fatally, because so few are published and so great a number remain unpublished, and hence no data could be established which would in any way give a proper ratio between the recoveries and the deaths. All the recoveries are reported, few of the fatal cases are reported, and hence time must elapse before a proper estimate can be made. It will not be long before surgeons will be induced to contribute all their cases, and when we have before us all the successful and unsuccessful cases the mortality of the operation can be correctly estimated. It is sufficient for the present to ascertain whether any successful cases can be presented, because all of these patients are necessarily mortally wounded if penetration and perforation have taken place. As the technique of the operation is better understood, and the methods of controlling hemorrhage are studied, as the signs and symptoms of perforation are made more reliable guides, the death-rate after laparotomy will be greatly diminished. Dr. Otis states that it may be still considered doubtful if an incontestable instance of recovery was observed in penetrating gunshot wounds. With such a deplorable condition as this, certainly laparotomy, if it saves only one life in many, all of which are doomed to inevitable death, is a justifiable procedure.

The *third indication for laparotomy* is where there is a rupture of the intestine. This condition is the result of traumatism.

The rupture of the intestine due to pathological processes, as in strangulation or ulceration, will not be considered this evening.

Rupture of the intestine from traumatism can be best studied and investigated by an examination of these many pathological specimens, a most interesting set of which I have been able to collect. The indication can also be studied by a reference to the clinical history of some cases which I shall present. The great difficulty which naturally con-

fronts the surgeon is the absence of a positive diagnosis. So many other conditions simulate the symptoms of rupture of intestine that the surgeon must be exceedingly careful in the conclusions at which he arrives before performing a laparotomy.

CASE XVI.—K. F., æt. eleven years. September 18, 1883. This specimen, which was taken from the

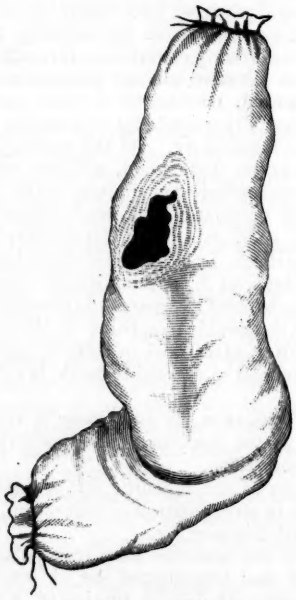
FIG. 6.

Rupture of duodenum near junction of jejunum.

abdominal cavity, illustrates the indication for laparotomy in cases of rupture of the intestine. The child was run over by a cart, the wheel of which passed over the anterior wall of the abdomen. Death occurred in twenty-four hours after accident.

Autopsy showed beginning fibrino-purulent exudation on peritoneum and about eighty ounces of yellowish-brown fluid in the peritoneal sac. No gas in the peritoneal sac. The retroperitoneal tissue was markedly emphysematous, especially behind the cæcum and the ascending colon, around the urinary bladder, and near the duodeno-jejunal junction. At the last mentioned place a soft yellowish material like feces was present in the areolar tissue. There was perforation of the middle portion of the duodenum. Other organs normal. The collapse, rapid respirations, and frequent pulse, vomiting, and, above all, emphysema, which was distinctly felt behind, denoted rupture of the intestine.

FIG. 7.



Rupture of small intestine.

Laparotomy in this case might have saved the life of the patient. The diagnosis was made before death, which diagnosis was proved correct by the autopsy, and the failure to do an abdominal section on my part in this case illustrates the important lesson that an opportunity was lost to save a human life, where perhaps it might have been saved by abdominal section.

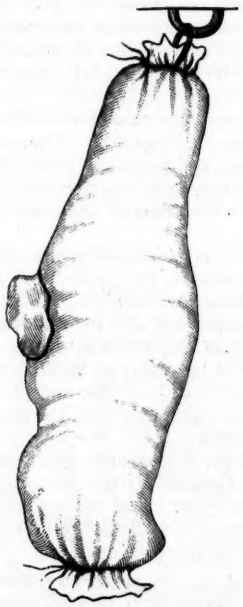
CASE XVII.—J. O. R., æt. seventeen, admitted to Bellevue Hospital, Oct. 3, 1883. Patient was run over by a wagon, the wheels of which passed over his body. No external evidence of injury save two slight bruises. Patient is in considerable shock.

Autopsy. The peritoneal cavity, upon being opened, showed a rupture of the duodenum and the specimen was sent to the Wood Museum. There is no regular report of the autopsy; but a note attached to the specimen states that there was also injury to right kidney.

This is another case where an exploratory laparotomy might have saved life; but the operation under these conditions was not considered at the time a recognized one in surgery.

CASE XVIII.—This specimen was taken from the body of a person who had been struck by a street car. There is a rupture of the serous or external and the muscular or middle coats of the intestine; but the mucous coat is not ruptured. It protrudes through the rent in the two outer coats and forms a hernia of the mucous coat. This hernial protrusion is more or less constricted and forms a pouch or diverticulum. There was no external wound upon the abdominal wall. There was considerable retroperitoneal hemorrhage. Patient lived twenty-four hours after accident. There is no clinical history attached to the specimen except such as has been given.

FIG. 8.



Rupture of serous and muscular coats.

Laparotomy might have saved this life, by arresting the hemorrhage, which seems to have been the cause of death. The hernia of the internal coat could have also been operated upon and cured.

CASE XIX.—P. W., æt. forty-two, admitted to St. Vincent's, Nov. 1885. Patient, while engaged in a sparring match, was struck by his opponent's fist. Pa-

FIG. 9.

Rupture of small intestine by fist.

tient was brought to hospital in condition of moderate shock. He complained of severe fixed pain in abdomen. There was no external evidence of injury. The following day pain diminished in intensity; but the pulse was more rapid and smaller. In the evening pain was severe and fixed. Passed a restless night and died in collapse the next day.

Autopsy. Upon opening the abdomen there was extravasation of blood in the planes of muscles; but no ecchymosis apparent externally. Liver and intestine were studded with lymph and were very much congested. There was seen a rupture of the ileum about two feet from the ileo-cæcal valve. The rupture was large enough to admit the end of the finger. The edges of the wound were everted and a mass of fecal matter protruded through the opening.

Laparotomy in this case might have saved the life of the patient; at all events, the only chance for recovery was a laparotomy.

CASE XX.—C. R., admitted to Ninety-ninth Street Hospital, December, 1883. Patient was struck by a pole of a truck. No external signs of injury. Patient was in shock upon admittance and his condition grew rapidly worse until his death, which occurred about forty-eight hours after injury.

Autopsy. A rupture of the ileum was found and peritonitis. There was no extravasation of fecal matter, but gas was contained in the peritoneal cavity.

In the absence of any hemorrhage and fecal extravasation, a laparotomy early performed might have saved the life of this patient; because he died from peritonitis caused by the rupture of the intestine.

CASE XXI.—W. L., æt. twenty-eight, admitted to Bellevue Hospital, Jan. 16, 1882. Through the courtesy of Prof. Wright the following facts were obtained from the clinical register. Patient had simple fracture of tibia and fibula of both legs and severe pain in the right iliac region, and was in a state of profound shock. During the night the patient partially reacted, and on the following morning temp. 97½° F., resp. 28, pulse very rapid and feeble. During the day patient had a movement from the bowels, but was unable to urinate. At 4.45 P. M., Jan. 17th, patient died.

Autopsy. When peritoneum was opened gas escaped from the cavity and fecal extravasation was present. The jejunum was ruptured four inches from its com-

FIG. 10.

Rupture of intestine.

mencement. Perforation large enough to admit the finger, and the opening was opposite to the mesenteric attachment. Evidence of commencing general peritonitis, the membrane hyperæmic, and spotted with shreds of lymph.

If laparotomy had been performed at once in this case, it is not unreasonable to believe that the life might have been saved.

I have searched through many journals in English, French, and German, to find a case where laparotomy was performed for the relief of rupture of the intestine which occurred as the result of traumatism. The following case is the only one that could be found to meet precisely these conditions, and illustrates the necessity for the operation under these circumstances. Horsley, Mikulicz, Wiltshire, Treves, Andrews, and Marsh have performed laparotomy, and with success, in acute septic peritonitis; but I do not know of a single case where a successful laparotomy has been performed for rupture of the intestine which has been produced by traumatism, and only one case in which laparotomy was performed under these circumstances.

CASE XXII.—Mr. Owens, of London, reports in *Lancet*, vol. ii. p. 663, 1885, a case where a patient sustained a rupture of the intestine from a plank falling upon the abdomen. There was no external injury. Patient had many of the signs and symptoms of perforation, and exploratory laparotomy was performed. The perforation was discovered, the opening sutured, and the viscera returned. The patient, however, died.

This case is a most important contribution to the meagre literature of this subject. Laparotomy was indicated, and it is to be regretted that the patient did not recover. The surgeon afforded the patient the only chance to recover.

Let me now refer to some cases which I have found in my researches upon this point, to illustrate from a clinical point of view the necessity for laparotomy in case of rupture of the intestine, but where the operation was not performed.

CASE XXIII.—Dr. Perier reported a case of rupture of the intestine in *Le Progrès Médical*, January 26, 1884. The patient was run over by a carriage, the wheels of which passed over his abdomen. The patient was in marked collapse upon admittance, and died the following day.

Autopsy. The peritoneal cavity contained about two litres of blood, but no blood-clots. No traces of peritonitis. The intestine was found completely divided, and the retroperitoneal space was filled with bloody serum.

The points of interest in this case, Dr. Perier states, are the absence of any external violence upon the abdominal wall, associated with the fact of a complete section of the gut; also the absence of peritonitis with a rupture of the intestine. The cause of death was from internal hemorrhage instead of peritonitis; as is the rule in such cases, the hemorrhage was from a branch upon the anterior part of the aorta, and the blood extravasating posteriorly; laparotomy might have saved this patient's life. The gut could have been sutured, and in the absence of peritonitis the condition would justify the conclusion that laparotomy might have saved life.

CASE XXIV.—Dr. Duplay reports also a case of rupture of the intestine in *Le Progrès Médical*, November 15, 1884. The patient was run away with, and it was supposed the carriage passed over his abdomen. Patient was in collapse, and died the same night.

Autopsy. The peritoneal cavity contained about two litres of blood, which escaped from a wound in the inferior mesenteric artery. The intestine was completely divided.

The reflections which Dr. Duplay makes upon this case are, that the absence of fecal extravasation in a case of complete rupture of the intestine is exceptional. He explains this fact by a reference to Jobert's experiments upon dogs, in which he showed that if the intestine be completely divided, the ends may contract by their circular fibres, and thus prevent extravasation; that feculent odor to the extravasated blood is explained by the phenomenon of endosmosis; that any hemorrhage, except, perhaps, from the aorta or the vena cava, ought to be controlled by a laparotomy. In this case a laparotomy might have saved the life of the patient, whereas a failure to perform this operation deprives the patient of the only chance of recovery.

Before dismissing this subject I wish to report a case which occurred to me last autumn, illustrating the uncertainty of the diagnosis of rupture of the intestine from collapse and tympanites.

CASE XXV.—A. N., æt. thirty-five, admitted October 17, 1885, to Bellevue Hospital. Patient fell while attempting to climb into an upper berth on a steamer. She states that in her fall her side and abdomen struck upon the edge of the stool upon which she was standing. Upon admission patient's abdomen was distended, slightly tympanitic, and the slightest pressure upon the abdomen produced very severe pain. Respirations were rapid and thoracic in character. Pressure over the part struck was attended with excruciating pain. Pulse hard, wiry, and rapid. Constipation had existed previous to accident for several days. Temperature 100° F.; knees flexed. Patient was very nervous and excited; no vomiting. General peritonitis developed. A fracture of the last rib was discovered, which had produced the peritonitis. The opium treatment was carried out, and in twelve days the patient recovered.

The general signs and symptoms of peritonitis in this case, taken in connection with an injury, the nature of which has been shown to produce rupture of intestine, were strong evidences in favor of rupture of the gut. It is to be noted, however, that emphysema was absent, also hepatic flatness was not lost, and these two important signs were necessary to make a positive diagnosis. This case is mentioned in order to emphasize these two pathognomonic signs, and also to place the surgeon upon his guard, lest mere collapse with general peritonitis following a traumatism, may lead to error in diagnosis and treatment.

CASE XXVI.—Dr. Hartigan reported a case of rupture of the ileum in the *Journal of the American Medical Association*. The specimen was taken from the body of a man who had been kicked in the abdomen. There were no external signs of injury. The patient died two days after the injury, and the autopsy showed signs of peritonitis produced by fecal extravasation.

This is another typical case where laparotomy would have afforded the patient his only chance of recovery, and there is every reason to believe that this operation would have been attended with success on account of the absence of hemorrhage and of only a single wound to suture.

The general conclusions which can be deduced from a study of the clinical and pathological facts thus presented in these cases of rupture of the intestine are these:

First. Clinically, emphysema is the only reliable sign of rupture of intestine, and collapse is the constant symptom with but a very few exceptions. But as collapse is present under so many other different conditions this symptom is not pathognomonic and loses its diagnostic value.

Second. Pathologically, the seat of the rupture is always in the small intestine, and this renders the operation less difficult than when the large intestine is involved.

Third. The sudden contraction of the circular muscular fibres of the middle coat of the intestines usually closes the opening in the distal and proximal ends of the gut, and thus prevents fecal extravasation into the peritoneal cavity, and this condition renders the prognosis more favorable than where rupture of the intestine follows ulcerative processes: because no peritonitis exists before the perforation, and in some cases no peritonitis follows the perforation. Death, in these cases, has been caused by hemorrhage and shock. Small hemorrhages are ar-

rested by the circular and longitudinal contractions, which, it has been demonstrated, prevent fecal extravasation.

Fourth. The mechanism of rupture of the intestine is somewhat obscure. It is probably caused, as Gendron and Ollive have pointed out, by the distended small intestine being pressed upon the vertebræ by a force acting in front and directed backward. By this mechanism there is a compression of the tympanitic gut between the force inflicting the blow anteriorly and the lumbar vertebræ posteriorly.

These ten cases of rupture of intestine are most interesting, because they illustrate an indication for laparotomy in visceral injuries, which operation has only been once performed, and then unsuccessfully. This injury opens another new field for inquiry and research, and enlarges the domain of abdominal surgery by adding another condition in which laparotomy should be performed, and without which the patient cannot survive. This triumph in abdominal surgery remains yet to be accomplished, and the first successful case will be eagerly looked for by the entire medical profession.

The *diagnosis* of injury to the abdominal viscera is a most important subject of study. With the exception of two signs, the diagnosis is to be arrived at by a study of the group of symptoms, any single one may be corroborative; but all of which, taken collectively, afford sufficiently positive evidence of injury to justify a surgeon in performing a laparotomy. The extravasation of the contents of the intestine in the wound, and the presence of emphysema in the adjacent tissues, may be said to be pathognomonic. There is, however, in addition to extravasation and emphysema, a chain of symptoms which has an important influence upon the subject of diagnosis.

Extravasation of fecal matter. This is a positive sign and admits of no exception. Whenever fecal matter is seen at the wound, it is proof that the intestine has been wounded. If the extravasation takes place within the peritoneal cavity, this sign is of no value until the abdominal cavity is explored.

Emphysema of tissues. This sign is also a positive one, and consists of the escape of gas from the intestine into the surrounding tissues, especially into the retroperitoneal, cellular, and connective tissue. This condition must not be confounded with an emphysema incident to an injury of the lung, which gives rise to the presence of air under the skin, and which might coexist with a penetrating abdominal wound, or from emphysema a result of gangrene of tissue from gas. In a penetrating stab or gunshot wound, emphysematous crackling is pathognomonic of perforation of the gut. I have seen this condition present in two cases of penetrating wound, and attach very great importance to the presence of this sign as evidence of a perforation of the gut.

Shock. The amount of shock depends more upon the idiosyncrasy of the individual than upon the actual injury to the intestine or organs. The persistency of the shock is of greater diagnostic value than its severity. I had one patient who had ten perforations in his intestine, and he lived nearly forty hours, and up to within four hours of death had no shock that could not be explained by an ordinary surgical injury. There was nothing at the outset that indicated perforation. The intestine is here upon the table, and it is a specimen which is of great value, taken in connection with the clinical history, because it demonstrates that it is possible not only to have one but a great many perforations of the intestine, and yet no shock be present sufficient to explain the condition. Absence of shock will not always exclude injury to the viscera; its presence, however, if persistent, is a strong link in the chain of evidence.

The question of shock as a symptom in penetrating wounds of the abdomen, is most important. My experience in many such cases has led me to believe that the shock is more apparent than real. This symptom in penetrating wounds is, to my mind, analogous to that observed in strangulated hernia. Both symptoms are manifestations of a depression of the sympathetic nervous system, and not the cerebro-spinal. No surgeon would hesitate to operate for the relief of a strangulated hernia because great shock was present. But in strangulated hernia the shock is due to a pressure upon the sympathetic nerves and ganglia which preside over the involuntary muscles of the alimentary canal. The shock is at once removed after the stricture is divided, and the patient's condition is immediately improved. In nearly fifty cases of strangulated hernia of which I have notes, and many of which have been sent to me through the kindness of Dr. Knight, of the Hospital for the Ruptured and Crippled, there are only three cases that I can find, where the patient died during or immediately after the operation. The shock in most of these fifty cases was as severe as in any case of stab or gunshot wound of the abdomen that I have seen. This condition of shock is precisely the same in the penetrating wounds, and I cannot find a case (excluding the three) in which the condition of the patient was not improved after the operation.

I do not mean to undervalue the symptom of shock; but I believe it is more apparent than real, and that its presence, even to a considerable degree, should not deter the conscientious surgeon from beginning a laparotomy. I feel sure that most of the cases in my list of penetrating wounds were improved, as regards the collapse, as soon as the peritoneal cavity was opened.

The shock in abdominal surgery was forcibly impressed upon my mind by a case which occurred in Langenbeck's clinic, in the winter of 1876. A case of strangulated hernia was admitted to the clinic in a moribund condition; Langenbeck operated and the patient expired upon the operating table. I remember well the remarks which this renowned surgeon made, as well as those in connection with this subject in his lectures upon military surgery. He said that he had seen patients almost pulseless with a strangulated hernia, and reaction follow after division of the stricture, and recovery take place. He said, further, that in these cases it is the duty of the surgeon to operate; because a patient may rally though moribund at the time, and the opera-

tion itself is the only possibly chance of recovery. The collapse is always greatest in an acute case of strangulation, when the hernia has appeared for the first time, and the analogy is observed in penetrating wounds. In old hernia the shock is never so severe.

Following the teaching of this great surgeon, under whose instruction it was my privilege to be for nearly two years, I feel that I have saved several lives which might be said to have been almost hopeless. Out of a number of cases operated upon for relief of stranulated hernia, where the patients were in extreme collapse, some have lived because herniotomy was performed, even though the shock was very profound. The same principle holds good in penetrating wounds, and the operation of laparotomy should be employed irrespective of shock, which is of a peculiar nature, is deceptive as to its severity, and offers no tangible excuse for a surgeon to decline the operation because he may think his patient will die upon the table.

The shock in those cases where there is no wound of the viscera, can, perhaps, be explained by the anatomical connection between the last seven dorsal nerves, which preside over the movements of the abdominal walls, and the splanchnic nerves, which are derived in great part from these dorsal nerves. For example, the effect of such stimulation upon Auerbach's plexus, which is supposed to control the peristaltic action of the intestine, is to produce a marked depression of the sympathetic system, and consequently the shock appears greater than it really is.

Thus, it is obvious that the presence or absence of shock affords no information to the surgeon as to direct injury of the intestine. There is one case reported by Taylor, where the duodenum was torn across, and the boy walked a mile and died in thirteen hours. Another case is reported by Poland, where a man, after a rupture of the intestine, experienced so little shock that he walked to his bed and undressed himself. Key reports a case where a man continued to carry sacks of flour to a vessel after rupture of the intestine. Agnew relates still another case, where a patient was able to wheel a cart across the yard. In one case which I had, there were several openings in the gut, and little or no shock present.

The shock, then, may be present immediately, and death supervene within an hour, or it may be deferred for hours—in the meantime the patient walks about the room; or shock may be absent for a day or two, and then the patient die in sudden collapse.

Tympanitic resonance over liver. This is a most important physical sign. It cannot be relied upon, however, as positive evidence of perforation. Liver flatness may be absent, and a tympanitic resonance be present, and yet other conditions than perforation may have brought about this change. Sudden distention of the colon, which may force the anterior border of the liver upward against the anterior wall of the chest, will, according to Prof. Janeway, cause the percussion note to be tympanitic over the normal area of liver flatness. In this event the liver flatness is posteriorly greater than normal, provided that there is no marked emphysema of the lungs.

Persistence of liver dulness, or flatness on percussion, Prof. Flint regards as of much importance as evidence against perforation. He has found that the injection of a small quantity of air into the peritoneal cavity in the cadaver causes the hepatic dulness or flatness over the liver to disappear, a tympanitic resonance taking its place. Clinical observations have shown that gas escaping from an intestinal perforation gives rise to a tympanitic resonance in the hepatic region. A tympanitic resonance in this region, however, is not proof of the presence of air or gas in the peritoneal cavity, inasmuch as this resonance may be caused by the transmission of resonance from the colon above the lower margin of the liver. But, if dulness or flatness over the liver persists, it may be concluded with positiveness that the peritoneal cavity is free from air or gas.

Dr. Biggs has called attention to two important facts: that adhesion of the intestines to the anterior abdominal wall may give rise to tympanites, or that a previous hepatitis may result in adhesion of the peritoneal covering of the liver to the abdominal wall, and thus prevent the escape of gas over the liver area. These are valuable observations to bear in mind.

Sudden meteorism. This is another symptom which is of great value as a diagnostic sign. It is difficult to differentiate this condition, which may be caused by a perforation from the tympanites following acute peritonitis, which may develop in a few hours. It is the suddenness of the meteorism, as well as its persistency, which must be taken into consideration. It must be observed that sudden tympanites may result also from a blow upon or injury to the abdomen or spinal cord. This condition of tympanites is due to a paralysis of the muscular coats of the intestine, and must not be mistaken for tympanites over the liver, the result of perforation.

Subnormal temperature. This symptom is generally present before peritonitis is developed, owing to the condition of collapse or shock in which the patient is usually found.

The *pulse* is rapid and feeble, and this sign is of great value. I have seen, in one case, the only thing pointing to a serious lesion in a penetrating wound was the great rapidity of the pulse and its feebleness. These characteristics of the pulse may be present in other injuries, but no serious lesion of the viscera can occur without a disturbance of the character of the pulse.

Fixed pain distinctly located. This is also a valuable symptom taken in connection with others, but is of no value by itself. I have seen, lately, this symptom present to a marked degree in a case of strangulated hernia which had been reduced by taxis, and I suspected a continuance of the trouble which it was hoped was relieved by the taxis. The pain was intense, and was localized and persistent; but, after twenty-four hours, subsided under the influence of morphia, and the patient recovered.

Vomiting. A symptom usually present in penetrating wounds, but one which is also present under so many other conditions that its value is only to be estimated in connection with the train of symptoms. Its absence will not exclude perforation; its presence is only corroborative proof.

Bloody stools. A most valuable sign in perforation, but one seldom seen, as peristalsis seems to be suddenly arrested for a time in the alimentary canal below the seat of injury. I have never seen this symptom, but I find it described by others, and should place great reliance upon its presence.

Retention of urine. This symptom varies, and to its presence no special importance can be attached. I have felt the bladder distended until it reached nearly to the umbilicus, and the patient was unconscious of the fact. The physician assured me that he had only just passed the catheter. A search should be made for albumen and for indican in cases where there is supposed perforation; the same as should be done in strangulation.

Anxious physiognomy is generally present in these visceral wounds, and the patient is extremely nervous. The patient's face is similar to that seen in cases of strangulated hernia or cholera.

The *respirations* are rapid and shallow, and for the most part thoracic. The muscles presiding over abdominal respirations are quiescent.

Acute peritonitis develops very soon after perforation or any visceral lesion. It may take only a few hours to develop. Its presence is, of course, most discouraging. As a symptom of perforation, the development of acute peritonitis is most significant.

Technique of the operation. In laparotomy every detail must be conscientiously observed. The success depends upon the manner in which the minutest detail is carried out during this formidable operation. The operating-room should be thoroughly disinfected with burning sulphur, which should be placed near the ceiling, and as the gas descends the room can be properly disinfected. The pan of sulphur should never be placed upon the floor, because the vapor will not ascend and such disinfection is useless. The temperature should be high, and kept so during the entire operation.

All known stimulants should be in readiness for immediate use, including the transfusion apparatus with Mikulicz's solution prepared as already mentioned.

The patient's abdomen, chest, perineum, and thighs should be thoroughly washed with hot water and soap, the hair shaved with a razor, and then all the parts irrigated with a bichloride solution (1:1000). The umbilicus should be cleansed, as this is a most important focus for septic infection. The bladder should be emptied by the catheter. New and previously disinfected towels are to be saturated in the bichloride solution or sulphurous acid solution and placed over the parts, thus protecting them during the operation.

All the instruments, ligatures, sutures, and drainage tubes should be placed in a glass tray filled with a solution of carbolic acid (1:40), and no instrument should be used without this immersion; if an instrument is to be used a second time during the operation it should be again placed in the tray.

The sponges should be counted, and should consist of the Zymoca flat sponges or "elephant's ears," as they are called in commercial language, and also round sponges and some large ones for use in absorbing blood. Every sponge should be bleached, disinfected, and kept air-tight until wanted for use at the operation.

The antiseptic dressings should be made for the special case, and prepared with the greatest possible care. The number present at the operation should be limited to a few, who have not recently visited the dead-house or a case of infectious disease.

But one assistant should introduce his hand into the cavity beside the surgeon, and this only when it becomes necessary. I have heard recently of a surgeon who requested some medical men present at a laparotomy to introduce their fingers into the cavity to experience the sensation of actually touching the liver in a living person.

The surgeon and the assistant having thoroughly cleansed themselves by washing and by irrigation, are now ready to proceed with the different steps of the operation. The incision should be made in the median line; any deviation from this rule will be found objectionable in many respects. The side incision does not permit the free exploration of the cavity, involves also dividing planes of muscles the hemorrhage from which is troublesome to control, and the primary union difficult to secure. The median incision divides no vessels of any importance, passes through the linea alba, which can be securely sutured, and is not likely to give rise to a ventral hernia. If the incision can be made in greater part above the umbilicus, there is less difficulty in returning the viscera. This incision should be made under warm irrigation; and before the peritoneal cavity is exposed, an exceedingly weak solution of bichloride of mercury should be prepared. The peritoneum can best be divided by using the index and middle fingers as guides, and cutting between them with a probe-pointed bistoury. Some surgeons recommend at this stage paracentesis intestinii to relieve the distended gut. This is attended with danger, because the intestine, being more or less inflamed, will not always contract to close the small aperture.

The surgeon must now introduce his hand, thoroughly cleansed and warmed, into the cavity, and explore. The manipulation necessary depends upon the indication for the operation. It is always well to pass the hand directly to the cæcum and feel if it is collapsed. If it is, there must be obstruction in the canal upon the proximal side and in the small intestine; if dilated, the obstruction is in the large intestine. Volvulus will produce obstruction in stab wound, as has been illustrated. If the operation is for wound, the presence of adherent clots, or fecal extravasation, will often reveal the intestinal wounds in the vicinity. If no wound is found, it may be necessary to withdraw the intestine and to examine it carefully. The intestine should be wrapped in towels or flat sponges, and kept outside of the cavity as short a time as possible. The wounds should be sutured, the cavity sponged dry, and the wound sewed by first placing a continuous suture of catgut in the peritoneal membrane. A second row of sutures of silk or silver should be introduced into the linea alba, and a third line of sutures into the skin. The tube should be introduced between the skin and muscles, and in the lower angle, and the

antiseptic dressings applied with moderate compression.

The after-treatment should consist of opium, to be given in such quantities as seem best to control any pain, to arrest peristalsis, and to quiet patient. The opium should be discontinued as soon as possible, for its use beyond the time to control peritoneal inflammation is attended with detriment on account of the tympanites, and this condition is unfavorable in a wounded gut, for fear of tearing open the wound. The diet should consist of milk and brandy, and great care should be exercised to prevent vomiting, which is an unpleasant complication. In less than a week the patient should be out of danger, and in ten days may sit up, and if complications do not arise, in two weeks he should be well.

The conclusions at which I have arrived from a study of those cases which have occurred to me recently, together with many others during the past few years, and also from those cases reported by other surgeons, are these:

First. That penetrating stab wounds of the abdomen are less fatal than penetrating gunshot wounds, but that the former are fatal in too great numbers to content us with the older methods of treatment.

Second. That if the stab wound has injured the intestine or any abdominal organ, laparotomy is indicated. That it may be indicated also in cases where the gut is not penetrated, but where the gut may become twisted as a result of the stab wound.

Third. That in a penetrating stab wound regarding which doubt exists, the diagnosis should be made certain at once, in order to pursue a proper line of treatment. The indications for laparotomy should be extended also to injuries of any organs within the abdomen.

Fourth. That laparotomy offers no great additional danger to the patient, if properly performed under the strictest antiseptic precautions.

Fifth. That while the number of exploratory laparotomies in stab wounds of the abdomen afford insufficient data upon which to establish any fixed rule of practice, the same principle which is recognized in the performance of laparotomy for gunshot wounds of the abdomen is also applicable to penetrating stab wounds.

Sixth. That the enlargement of the original wound for an examination of the peritoneal cavity will not enable the surgeon to exclude in all cases fecal extravasation, perforation, volvulus, or hemorrhage. These may all exist, and no evidences of their presence be manifest upon inspection through a small opening. My own experience accords with that of Prof. Weir, that enlarging the wound may or may not offer the essential knowledge.

Seventh. The size, shape, character, and velocity of the bullet, the attitude of the patient, the kind of weapon used to produce a stab wound, seem to me to influence the question of laparotomy. Any and all of these injuries are likely to produce perforation; and if there is any value in abdominal section, it should be promptly performed, irrespective of the facts connected with the penetrating abdominal wounds.

Eighth. It is possible to have a fatal hemorrhage from the large venous trunks in the abdomen, and this hemorrhage not be discovered until the cavity is about to be closed, when an attempt is made to sponge out the bottom of the peritoneal cavity. This has occurred to me in two cases, in one of which I had closed seven openings, and in the other I had examined the viscera in the cavity. The hemorrhage was checked at the time of the opening, and was not apparent until the close of the operation.

Ninth. That the sutures, if properly applied, will close the perforation in every case, no matter how lacerated these wounds are. The sutures will close the wound in case of resection of the gut, so that no leakage will occur if water is forced through the sutured intestine.

Tenth. The success of laparotomy is to be attained where every arrangement is complete and perfect. Everything depends upon the preparation which is made for this operation, and the antiseptic conditions under which it is performed. The shock, the perforations, the resections of injured parts of the canal, and the after-treatment, are all important steps in this great operation; but the one obstacle yet to be overcome in the management of these cases is the control of the hemorrhage from large venous trunks, and until this object is accomplished, the science of surgery in this operation cannot be said to have arrived at a state of perfection.

In the present unsettled state of opinion, it would seem best not to perform this operation in medico-legal cases without the full sanction and support of a consultation. The courts of law have recently agitated the question of the propriety and the justifiability of this measure in penetrating wounds, and the legal profession have already upon several occasions, to my personal knowledge, found refuge in this operation to defend a criminal on trial for murder.

When laparotomy is placed among the well-recognized operations in surgery, and when all opposition to it has ceased, the credit of this great achievement will be due to the influence of the writings and teaching of the late Prof. Gross. As far back as 1843, he said in his monograph on the "Nature and Treatment of Wounds of the Intestines:"

"Here the most prompt and decisive measures must be resorted to, or the person will perish from peritoneal inflammation. . . . It will not do for the surgeon to fold his arms and look upon the scene as an idle and uninterested spectator. Far otherwise. He has a duty to perform, and that duty consists in dilating the external wound if it be not already sufficiently large, in hooking up the injured bowel, and in closing the solution with the requisite number of stitches, at the same time that the effused mater is carefully removed with tepid water and a soft sponge."

The remarks of the late Dr. J. Marion Sims gave new impulse to these views enunciated by Dr. Gross nearly half a century ago, and these theoretical opinions were again supplemented by the distinguished work of Dr. Parkes, of Chicago, who made a practical application of the theory in his researches

and experiments upon lower animals. It remained for Dr. Bull to make the practical application of this knowledge available to higher uses, and thus step by step, through nearly half a century, we have arrived at the accomplishment of our object. It is a source of national pride, that laparotomy in penetrating wounds and visceral injuries of the abdomen was conceived, developed, and perfected in America.

A CASE OF RETROPERITONEAL SPINDLE-CELLED SARCOMA WITH EXTENSIVE THROMBOTIC AND HEMORRHAGIC CHANGES.[1]

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IN addition to features of general clinical interest, the following case is worthy of record from the rarity with which spindle-celled sarcomata form large abdominal tumors, and still more so from the remarkable hemorrhagic destruction which the greater portion of the growth had undergone.

Michael D., æt. sixty, machinist, resident of this country for thirty years, was admitted to the University Hospital, September 25, 1885, with a tumor of abdomen. Has been a moderate drinker, has used tobacco to excess. Has been healthy, "never sick a day" until present illness. Family history good; has nine healthy children. About six months ago, he noticed that the abdomen was getting large, but felt no inconvenience, and it was not until two months ago that he began to feel uncomfortable after eating, and began to lose flesh and strength. Has lost about eighteen pounds in weight. His appetite has, at times, been ravenous, and the thirst excessive. Bowels obstinately constipated, no movement without purgatives. No pain of any kind in abdomen, only an unpleasant fulness after eating,

Present condition: Moderate emaciation; weight 117 pounds. Complexion muddy. Temporal arteries prominent and tortuous. Tongue clean; appetite good, but he cannot take large meals on account of sensation of fulness. Says he is in good health, only weak. Passes about seven pints of pale urine of a specific gravity of 1.004, with a trace of albumen; no casts, no sugar. Examination of thoracic organs negative. Abdomen presents a symmetrical prominence in the neighborhood of the umbilicus, rather wide and flat. Superficial veins not distended. On palpation a solid tumor is felt occupying the hypogastric and umbilical regions, and extending laterally into the flanks. It is irregularly nodular on the surface, slightly movable, and the rounded outlines above and laterally can be distinctly felt. Below, the outline is not clear and cannot be defined. Grasped firmly, it can be moved as a solid uniform mass occupying a median position. No one part is softer than another, and there is no sense of fluctuation. Percussion gives a dull note over the tumor, tympanitic above in the epigastric region and in the lateral part of the umbilical. From spleen and liver the mass can be easily separated both by percussion and palpation. There is no pain in handling. Measurement round umbilicus thirty and three-quarters inches. Glands in groin not enlarged, feet not swollen.

He stayed in hospital until November 11th, the condition remaining unchanged, except that he gained three or four pounds in weight, and his general health had improved. The condition of the urine was of interest: for several weeks he continued to pass more than seven pints daily of pale urine of a low specific gravity, with a trace of albumen, but in the last three weeks in hospital the amount fell to about three and a half pints. On October 18th he was made the subject of a clinic, when the diagnosis of Lobstein's retroperitoneal sarcoma was made. The polyuria was attributed to irritation of the renal nerves caused by the pressure of the tumor.

On the 10th of November he went home. Subsequently he was admitted to St. Mary's Hospital, under Dr. O'Hara, and the upper part of the mass, which had become soft, was aspirated by Dr. Mears, and a couple of quarts of bloody fluid removed. He was taken to his home, where he died in April, and I have to thank Dr. Miller, under whose care he was, for an invitation to be present at the autopsy, and for permission to utilize the specimens.

Autopsy, with Drs. Mears and Miller. Considerable emaciation, abdomen distended, discolored in upper part. A solid tumor could be felt occupying a large part of the cavity, firm below and soft above. On exposing the peritoneum a large mass occupied the lower three-fourths of the cavity, pushing up the intestines. The membrane was smooth, in places covered with small grayish-white nodules, and in the flanks there were a few adhesions. At the top of the tumor a coil of jejunum was adherent, and of a dark, pigmented appearance. Many large veins coursed over the surface of the tumor, which was covered by the glistening peritoneal membrane. In the upper, flaccid portion was an orifice, through which blood oozed, and in the peritoneal cavity there were about two pints of fluid of a similar character. The intestines were carefully removed; there was only the one adhesion, already mentioned. The mass, which was covered by peritoneum, occupied a median position, lying upon the spine, and extending to the brim of the pelvis. The hand could be placed behind it and passed down the vertebral column, and into the concavity of the sacrum, and in these regions the tumor had no adhesions. Below and to the left it was loosely united to the lower part of the sigmoid flexure, but the chief attachment was to the brim of the pelvis on either side of the fundus of the bladder, and particularly to the right side. The bladder itself was not disturbed in position; the top of it could be seen lying between the symphysis and the tumor. The adhesions, which were readily separated, were closest to the transversalis fascia on the right side near the pubic bone. The weight was estimated at about eight pounds.

The tumor consisted of two parts, an upper cystic, flaccid portion, and a lower solid one. When opened, the cyst contained rather more than a pint and a half of bloody fluid, with flakes of yellowish-brown material, which also lined the wall, giving an appearance not unlike a large aneurismal sac. The walls were thin, and consisted of a peritoneal investment, within

[1] Read before the Philadelphia Pathological Society, January 14, 1886.

which was a firmer, condensed fibrous tissue. The blood removed at the tapping had evidently come from this sac. A transverse section across the solid part showed a central, firm, dry, yellowish-brown tissue, which cut with resistance, and which was everywhere surrounded by extravasated blood, occupying a position just within the capsule, and in some places extending into the substance. In this section there was nothing suggestive of a neoplasm, the tissue resembled the dry, leathery contents of an old aneurism, except that there was no lamination. Section of the lower part of the mass near the pelvis revealed several soft, grayish-red portions, cerebriform or encephaloid in appearance, and evidently of a sarcomatous nature. They formed, however, a very insignificant part of the entire mass.

There was no special enlargement of the retroperitoneal or mesenteric lymph glands. The stomach and intestines presented nothing abnormal. The pancreas and spleen were unaffected. The liver contained one secondary mass in the left lobe, the size of an orange, and several smaller ones. The kidneys were fibroid, and the ureters and pelves dilated, particularly the right; due, doubtless, to pressure. The heart showed moderate hypertrophy of the left ventricle. Aorta smooth. Lungs much carbonized, and somewhat emphysematous. Brain not examined.

Histological examination: Teased portions showed that both primary and secondary growths were composed of large spindle cells, closely packed together. The remnants of the original growth situated at the lower part of the tumor were quite distinctive, and had not undergone degeneration. There were also, in some places, portions of sarcomatous tissue just within the capsule, separated from the central dry thrombus by freshly extravasated blood. Sections of hardened portions showed a typical spindle-celled growth. The thrombus presented a finely granular basis-substance, between strands of translucent, hyaline material. All traces of cell structure were gone.

Remarks.—The points of interest about this case may be briefly considered under the following heads.

The character of the growth: Spindle-celled sarcomata rarely form large abdominal tumors. In the examination of a considerable number of new growths of all sorts, removed from the peritoneal cavity, I have not met with a similar one.

The situation of origin was unusual. I fully anticipated that we should find it springing from the lumbar retroperitoneum, the common point of origin for large abdominal sarcomata. Here the growth seems to have begun in the subserous connective tissue in front of the symphysis, not from the periosteum, for it was quite loosely attached. It is interesting to note that spindle-celled sarcoma not infrequently originates in the connective tissue of Scarpa's space, a tissue directly continuous with that from which the tumor in question grew.

The looseness of the attachment and the readiness with which the tumor could be lifted out of the abdominal cavity made us regret that we had not yielded to the old man's urgent solicitation to have the abdomen opened.

The character of the regressive changes: So soon as a tumor attains any size we expect to find in it areas of degeneration, fatty, caseous, or calcareous; or, if a rapidly growing neoplasm, hemorrhages. Sarcomata are particularly prone to hemorrhage; indeed, when growing actively, it is rare not to find foci of extravasation in them. The effused blood not unfrequently becomes encysted, and the dark contents appear to result from the liquefaction of the coagulum. In a large tumor several such cysts may exist. Small scattered hemorrhages are more common, and the blood gradually undergoes changes without materially altering the appearance of the growth.

The condition in the case here reported is very unusual, as the greater part of the tumor had become converted into a dry, hard thrombus, while a considerable portion was occupied by a blood-cyst, so that the mass resembled a huge hæmatoma rather than a neoplasm. Such general hemorrhagic destruction of a large tumor is not often met with, and I have not been able to find the record of a case with just such extensive thrombotic changes as here described. The mode of production can be readily understood from the appearances presented by the mass. No doubt softening and destruction by hemorrhage first occurred, as existed, indeed, at the upper part of the tumor, which formed a large blood-cyst, the walls lined with thrombi, and in the fluid contents of which were flakes of firm fibrin. This cyst had been much larger, as nearly two quarts of bloody fluid were removed from it by aspiration. Had life been prolonged, the blood thus extravasated would, doubtless, have become inspissated by the absorption of the more fluid parts, and the remainder have been converted into just such a dense, dry mass as existed at the lower part of the tumor. It seems reasonable to infer that the firm, hard thrombus which constituted more than one-half of the entire tumor, was formed in this way. Possibly the hemorrhages beneath the capsule, which were very general, aided the process, though nowhere could a distinct lamination be detected.

The polyuria: Pressure of new growths in the abdomen upon the solar plexus or upon the renal nerves may cause a very great increase in the flow of urine. The irritation in this case was transitory, as the amount fell to normal before he left the hospital. We do not yet know the precise conditions under which this occurs. Instances of it are rare, and we need careful observations on the state of the nerves. Dickinson, in his work on *Diabetes*, mentions a case in which degeneration of the solar plexus was found. Owing to the unfavorable circumstances under which the post-mortem was performed, no dissection of the nerves could be made in this case.

SUPERNUMERARY MAMMARY GLANDS AND NIPPLES.[1]

THREE CASES.

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THAT only about one hundred cases (105, Liechtenstern) of polymastia have been recorded will at once

[1] Read before the Philadelphia Pathological Society, January 14, 1886.

appear as the *raison d'être* of this brief communication. A somewhat unusual opportunity for the examination of patients in hospital practice and in the examination of recruits, has convinced the writer that these additional mammæ are not, at least in this country, of very frequent occurrence. It is proper, however, to add that Dr. J. Mitchell Bruce is of the opinion that the number of cases seen by practitioners and not reported must be very great. It becomes somewhat interesting to look into and, if possible, arrive at the cause of these abnormalities. Laycock, in endeavoring to explain the existence of the accessory glands, thinks that the mammæ are simply enlarged and highly developed sebaceous glands, and may make their appearance in any part of the body.

I might cite as a possible example of this theory, Klob's case of an accessory mamma growing on the left shoulder of a man, on the prominence of the deltoid.[1] It was a true mammary gland, and had a nipple about a quarter of an inch in length, the entire gland being about the size of a walnut.

In turning to the morphological significance of these cases, we must consider the character of the mammary glands in the different orders of mammalia, remembering that in the marsupialia and the monotremata the glands possess no nipple, their orifices being mere scattered pores in the skin.[2]

In the Simiadæ, from the anthropoid apes to the marmosets or arctopithecini, "the teats are only two in number," and they are pectoral.[3] In the lower section of the Primates, the Lemuridæ, "sometimes there are one or two pairs of teats on the abdomen in addition to the ordinary pectoral pair."[4]

In the aye-aye (Cheiromys Madagascariensis) "there is but one pair of nipples, situated about one inch and a half in advance of the vulva, and one inch apart."[5]

We are all familiar with the vulvo-pectoral teats of the common carnivora and the inguinal udder of the ruminants. In the Pteropodidæ (fruit bats or flying foxes) and the flying "lemur," Galeopithecus, we find axillary teats.

So if we desire to explain the presence of supernumerary mammary glands in women by the reversion theory, we see that there are numerous places where the accessory organs may grow; yet, as we will see later, the recorded cases seem to differ in their site from all morphological laws.

That our species present the pectoral position of the teats does not show any special superiority, as the glands are found in the same position in the bat, dugong, manatee, elephant, sloth, and the ant-eater.

We do not find the number of teats always in relation to the offspring; as, for example, the rat has twelve, whereas the guinea-pig has but two; again, the tenrec (centetes), an animal somewhat like a hedgehog, has twenty-two nipples, and Owen tells us that in the European hedgehog there are ten, ranging from the pectoral to the inguinal region, adding that the thin, flat mammary gland of this insectivorous animal seems to form a continuous stratum.

Before leaving this part of our subject, it may be interesting to note that Professor Owen[1] describes a female orang-outang with an accessory nipple on the left side, below the normal one and of smaller size.

The case that I am about to record was noted in the spring of 1884, in company with my student, Dr. Thomas D. King, of Springfield, Ohio.

CASE I. — John J. B., æt. thirty-six, a healthy, well-developed man, came under my care for subacute alcoholism, and while examining his chest for impending pneumonia an accessory nipple was noted on the right side almost on a line with and three inches below the normal one, similar in size, presenting an areola with glandular nodules and a few stiff hairs. There was no discharge from either the normal glands or the accessory nipple; it had never caused the patient any inconvenience, beyond a certain hesitancy and delicacy in confessing the abnormality.

In conversation with my patient, I learned that his sister presented the same abnormality, and an interview was arranged.

CASE II.—Mrs. N. M., æt. thirty-eight, mother of four children, the youngest a nursling. The woman was a perfect specimen of the healthy Irish-American female that we so frequently meet.

The accessory breast in this case was on the left side, normal in appearance, somewhat smaller than the other two, but was functionally active with a good flow of milk from a perfectly normal nipple; during my visit the child would nurse indiscriminately from any of the breasts. The woman informed me that she had nursed all of her children in this way. I learned that the supernumerary gland developed coincidently with the others, becoming active as they did and again physiologically barren as their secretion retroceeded.

These two cases, and the two reported by Handyside,[1] open an interesting field in the study of the inheritance of the abnormality. In no case recorded by Bruce (Ibid.) was heredity at all clear. Liechtenstern could find no illustration of heredity among his own cases, but remarks that inheritance was indicated in 7 of the 92 cases recorded in literature.

All the instances of supernumerary nipple that came under observation were situated on the front of the trunk, below the level of the ordinary mamma and somewhat nearer the middle line, but unfortunately for those adherents of the theory of morphological explanation of these cases, abdominal nipples are extremely rare. Bruce, however, describes two cases where one of a pair of nipples was distinctly below the costal cartilages.

Liechtenstern's conclusion, from his own experience and from the recorded cases, is that "accessory nipples and breasts occur in 91 per cent. of the cases at the front of the thorax; and in 94 per cent. of these below the normal." In one of Liechtenstern's

[1] Zeitschrift der k. k. Gesellsch. der Aerzte zu Wien, 1858, No. 52, p. 815.
[2] Prof. W. H. Flower, LL.D., F.R.S., and G. E. Dobson, M.A., M.B.
[3] Huxley's Manual of the Anatomy of the Vertebrated Animals.
[4] Huxley, Ibid.
[5] Prof. Owen, The Anatomy of the Vertebrates, vol. iii.

[1] Anatomy of the Vertebrates, vol. iii. p. 730.
[2] Notice of Quadruple Mammæ, the lower two rudimentary, in two adult brothers, by P. D. Handyside, M.D., etc., Journ. of Anat. and Phys., vol. vii. p. 56, 1873.

cases, the nipple occurred in the axilla, which is an extremely rare situation. All observers agree in stating that additional mamma or nipples are most frequently seen on the left side. Liechtenstern endeavors to account for this by the well-known fact that the left mamma is, as a rule, more developed than the right, and that mothers use the left more than the right in suckling. He is of the opinion that the same relation exists in the child and virgin.

As to the frequency of this abnormality, I may mention that in Bruce's investigations of 3956 persons 61 cases of supernumerary mamma or nipples were found, being 1.54 per cent. Of these cases 51 were simple cases, presenting a single supernumerary nipple or mamma, 10 were multiple, presenting more than one supernumerary nipple.

A perusal of Mitchell Bruce's exhaustive article would lead one to conclude that supernumerary nipples or mammæ must be much more frequent in England than they are in this country, as, out of 315 persons taken as they come and go in a dispensary service, he found that 287 individuals presented no supernumerary nipples or mammary glands; 24 individuals presented one or more supernumerary nipples or mammæ; and 4 individuals presented appearances which were regarded as doubtful instances of the abnormality. A representation of this result in percentages would be as follows: 91.1 per cent. presented no supernumerary nipple or mamma; 7.619 per cent. presented one or more supernumerary mammæ or nipples; and 1.27 per cent. possessed what was doubtfully regarded as the abnormality. This is certainly a high rate of frequency, even above that of Liechtenstern, who places it at "1 in 500 persons at least." As to the relative frequency of the abnormality in the sexes, it appears from the above statistics, which are undoubtedly the best that are available, that supernumerary nipples occurred very nearly twice as frequently among men as among women; this conclusion also agrees with Prof. Liechtenstern's result. It will be readily understood that definite statistics are extremely hard to formulate in these matters, as some cases will undoubtedly be overlooked unless attention is particularly called to the mammary regions. Again, some of these supernumerary nipples may quite escape detection on account of their want of resemblance to the normal standard; for example, the additional nipple may be wanting in the areola, the follicles, the marginal hairs, or, again, the papilla may be poorly developed, as may also be the terminal depression or opening. We may be misled by a hair springing from the summit of the papilla, as in one of Bruce's cases.

Before leaving the subject, it is, perhaps, well to mention some cases of supernumerary mammæ in unusual situations.

Dr. Fitzgibbon[1] records the case of an individual with double and symmetrical supernumerary nipples below and within the normal, together with two pigmentary deposits, one on either breast higher up.

Accessory mammæ, with nipples, have been found in the axilla,[2] and to Liechtenstern also belongs the credit of describing two cases of dorsal mammæ; his references, quoted by Bruce, are as follows: 1. Ch. F. Paulinus (*Observat. Medico-physic Select.*, in the *Miscell. Curios. Academ. Med. Phys. Nat. Curios.*, dec. II. ann. iv. page 203, Appendix); 2. Joh. Otto Helbig (*De rebus variis indicis*, Obs. 194, quoted in *Miscell. Curios.*, etc., dec. II. ann. ix. and x. p. 456, ii.).

Again must we credit Liechtenstern with showing the fallacy in the statement of the existence of inguinal mammæ. He has pointed out the fact that the idea has arisen by careless reference to Roberts's case (see Luschka, *Anatomie des Menschen*, Band I. Abthril. 2) of a woman who had an accessory mamma on the outer aspect of the left thigh, four inches below the trochanter; it was accidentally discovered by the patient's child, who one day attempted to suck the nipple.

Dr. H. L. Turney[1] reports a case of additional mammary gland in the right axilla; it was nippleless, but secreted milk freely from several orifices after each confinement.

Dr. Cohn presented a patient before a meeting of the Berliner Medizinische Gesellschaft, in February, 1885, with an accessory mammary gland in the left axilla, from which milk dribbled away. There was no nipple. Mr. A. H. E. Cameron[2] also records a case of left axillary mammary gland without nipple; and Mr. Bickersteth informs him that he has seen two similar cases of nippleless glandular tumors bearing the characters of mammary glands.

The following case occurred in the practice of Dr. H. R. Wharton, of Philadelphia, to whom I am indebted for the notes:

CASE III. — Mrs. S., æt. twenty-seven, in her third confinement, called my attention to a supernumerary nipple on the right breast, situated about three inches below the normal nipple, just at the edge of the mammary gland. It was smaller than the normal nipple, had a well-developed areola, contained milk, and the child could use either indiscriminately. Before her first confinement she thought it was a mole, but at this time it became enlarged and contained milk which escaped freely from it at the time I saw her.

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3. A. H. F. Cameron: Three Cases of Axillary Mammary Tumor. Journal of Anatomy and Physiology, 1879, vol. xiii. p. 149.

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[1] Dublin Quarterly Journal of Medical Sciences, vol. xxix. p. 109, February, 1860.

[2] Liechtenstern, with illustration.

[1] Nashville Journal of Medicine and Surgery, April, 1883.

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300 S. THIRTEENTH ST., PHILADELPHIA.

HOSPITAL NOTES.

DISPENSARY FOR NERVOUS DISEASES, BALTIMORE.

Service of JOHN VAN BIBBER, M.D.

CLINICAL NOTES.

CHOREA.

THE increasing frequency of chorea makes the study of this disease most interesting at the present time. In the last two annual reports of the Dispensary for Nervous Diseases I have alluded to the marked increase of this disease, and lately I have been struck by the fact that in two days six cases of St. Vitus's dance applied at this clinic for treatment.

Both in the later text-books and in the journals the theory that heredity plays an important part in the production of chorea has been advanced, but I can discover no reason to think that any one of this series of cases has been brought about by hereditary influence. In fact, while we may find curious instances of a family tendency to choreic attacks, I think the observation is so out of proportion to the number of cases seen, that we must look to some other cause for the marked increase of a disease which, some years ago, was rarely observed. I do not pretend to deny that a neurotic tendency cannot be, and, in most cases, is not transmitted, but I find myself confronted at once with a difficulty in accounting for the development which we are called upon every day to observe at the Dispensary. Heredity can have no influence on the children of parents who have never heard of chorea, and who, from their position in life, have been denied the surroundings which tend to develop the nervous system in its higher and more intellectual side. Hence, in this clinical study of the subject, we must look to some other cause to account for a most interesting and important manifestation of nervous disease.

At the present time what I may term the over-balance of the nervous system in children is remarkable. We see to-day insomnia, headache, and other nervous manifestations among children, which were formerly confined to adult life. Chorea is now, in my experience, almost an epidemic, and it will be the object of these records of the service at the Dispensary to investigate the cause or causes of the increase of St. Vitus's dance, to determine by experience the best method of treating the disease, and to endeavor to suggest the means to prevent this unusual and alarming tendency. For this purpose accurate notes will be taken of all cases presented for treatment, and in a subsequent record the details of another series of cases will be submitted.

I select from the notes of my assistant, Dr. H. C. Ohle, the following data of six cases of chorea which applied to the Dispensary for treatment respectively on January 18 and 19, 1886.

CASE I.—J. C., a girl nineteen years of age, is a seamstress by occupation. On inquiry, we learn that this is the third attack from which she suffers, they having occurred at intervals of about one year. Some time before symptoms became pronounced she lost her appetite, became nervous, slept badly at night, and was much depressed; her menstrual function, which, previous to this time, had been normal, became irregular. There was a like history in the two former attacks.

On arising about two weeks ago, after having spent a restless and nearly sleepless night, she felt very much depressed, and had a hysterical crying fit; from this time on, she was unable to attend to her work. She would let articles drop from her hand, seemingly unable to prevent it, and noticed curious twitchings and movements of her head, which extended to her arms and legs. I further learn that she works all day in a close room, and has been in the habit of going out very often in the evening to dance, etc., which, no doubt, tended to debilitate her.

On examination, we find that the head and the arms and legs of both sides are involved in the choreic movements, which seem to be aggravated somewhat after entering the room, possibly owing to the excitement induced by the examination. Patient is very anæmic, though apparently stout; has no appetite, cannot sleep at night, and is extremely depressed and hysterical. She was directed to remain as quiet as possible, to avoid all excitement, to remain in bed late in the morning and to retire early at night; and, as the weather was inclement, forbidden to go out. The therapeutical treatment consisted principally in conium, bitter tonics, and iron. Quiet, rest, and suitable food were insisted on, and these I have every reason to believe were carried out. She was discharged well on Feb. 18th.

CASE II.—M. G., a girl sixteen years of age, lives at home with her parents. This patient had her first attack when twelve years of age, at which time her menstrual function was established; she has suffered recurrent attacks every spring since then, this being the fourth, which began one week ago. Patient is very tall and slender, extremely delicate in appearance, poorly nourished, and anæmic. She is subject to menorrhagia.

On examination, we find that the muscles of the *right* side of the head and arm are alone involved in the choreic movements, which are severe in character. She gives the usual history of anorexia, interference with sleep, etc. She is much depressed, and has a morbid fear that her trouble may prove fatal. She was directed to remain in bed late in the morning and to retire early at night, to rest, and to keep as quiet as possible, avoiding all excitement; was ordered conium, iron, and bitter tonics, and later on, arsenic. She grew worse after the first week of treatment, which was accounted for by the fact that she attended several meetings of the Salvation Army, in which she seemed to take especial interest. These were promptly prohibited, and the necessity for quiet and rest and avoidance of all excitement made clear to her; from the time she observed these directions she has much improved. Appetite is good and the choreic twitchings are reduced to a minimum. She is still under observation, although medicines have been discontinued, with the exception of iron.

CASE III.—A. H., a girl thirteen years of age, living with friends. Symptoms were first noticed about two months ago, shortly after the death of both parents, to which fact her friends attribute the chorea, the patient having been well and hearty previous to this time. After this sorrow she commenced to grow pale and thin, ate little food, and became excitable. The choreic movements were noticed at this time, but were thought to be the result of shock from the loss of her parents. They grew worse, however, and after two months she applied for treatment.

On examination, we find that the whole body participates in the choreic twitchings to a most excessive degree. She is unable to remain quiet, the movements persisting during the night, so that it is impossible for her to obtain sleep. She is very anæmic, and has no desire for food. She was directed to keep quiet, to rest in bed as much as possible during the day, and at night to take a hot sponge bath to spine, to be followed by rubbing with a coarse towel; potassium bromide was given to induce sleep. In addition, iron, bitter tonics, and conium were ordered. Isolation from other children was insisted on, so as to insure more perfect quiet and rest. She improved rapidly under this treatment, and after a week the potassium bromide was withdrawn, as sleep was obtained without it. Her appetite has become established, and she has so far improved that it was thought unnecessary for her to remain in bed during the day. She is still, however, under observation.

CASE IV.—J. B., a girl twelve years old, was presented for treatment by her mother, with the following statement: one year before, she had an attack of chorea, which was very protracted; she attends school, and is a very close student. After recovery from her first attack, she enjoyed good health until about six weeks ago, when she lost her father, to whom she was much attached. After this time she began to fail perceptibly, developing choreic movements.

On examination, we find that movements are confined to the left side of face and left arm; there are slight twitchings in left leg. She was very excitable, crying readily when questioned, which aggravated the twitchings greatly. She seems to be well nourished, possibly a little pale and anæmic. She sleeps little at night, which her mother thinks is owing more to her mental excitability than to the choreic twitchings; appetite is poor. Notwithstanding her condition, she insists on going to school.

Her mother was advised to take her from school, to keep her quiet in bed as much as possible, and away from other children. She was given conium, iron, bitter tonics, and later on, arsenic; at night potassium bromide was given. She improved slowly, and not so rapidly as the cases before cited, which can be accounted for by the fact that she was hard to manage, being very wilful and not ready to carry out the treatment. If she could have been treated under more favorable circumstances in a hospital, where the plan of rest and quiet could have been carried out, she would undoubtedly have progressed as favorably as the other cases.

CASE V.—M. G., a girl ten years of age, was presented for treatment, with a history of having been frightened two weeks ago, since which time she has had choreic movements in her arms. On inquiry, we learn that she had a previous attack when about six years old, which was, however, mild in degree. On examination, we find that the muscles of face and those of arms are involved to a great extent. Patient is very poorly nourished, and apparently badly cared for. Her mother was directed to keep her quiet, to give her at night a hot spinal sponge bath, followed by rubbing with a coarse towel, and, above all, to see that she got appropriate food, which directions were promised to be carried out. In addition she was given conium, elixir ferri et calcis, and calcic phosphate.

The girl is now much improved, the choreic movements have almost disappeared, although she is still delicate and pale; she is still under observation, the administration of elixir being continued.

CASE VI.—F. H., a boy nine years old, presented for treatment by his mother, with history of having enjoyed good health up to within two months. He attended school and was very studious up to that time, when he began to lose interest in his studies; about four weeks ago, he developed chorea on right side, which is excessive in degree. On examination, we see that the boy is delicate and puny-looking, and that the choreic movements are confined to the right side of the face and right arm and leg, and are violent in character, nearly twisting him around as he stands. He is unable to sleep, and complains of vague pains on affected side; appetite is very poor. Quiet and rest in bed as much as possible were directed, and isolation from other children to avoid excitement. In addition, the hot sponge bath and rubbing with coarse towel daily. Conium, iron, and bitter tonics, and later arsenic, at night potassium bromide, were given for a time. In this case, also, the progress was not as rapid or as favorable as desired, but it was impossible to carry out the plan of treatment ordered, as the mother is a widow and has eight other children.

In each of these cases a functional heart murmur was found.

Remarks. Of these six cases, three had suffered from former attacks of this disease, one having had three attacks, one four, and one was suffering from St. Vitus's dance for the second time. The three remaining cases were caused by fright or grief, and all were unconnected with rheumatism. I consider it to be rather remarkable to have six cases of chorea apply at a small clinic in two days, and I shall take special care to have accurate notes of this class of patients taken in the future, looking to the value of statistics for a specified time.

In an article on the "Rational Treatment of Chorea" (*American Journal of Neurology and Psychiatry*, May, 1884) I formulated the treatment which was successfully carried out in eighty-six cases of this disease, and since that time I have had no reason to vary this method materially. This consisted of a combination of medical regimen and proper physical care, and is briefly detailed in the cases above reported. Rest, tonics, food, and proper hygiene, are the principal factors in this treatment, and in most cases rest is by far the most important element. After confinement in bed during the day I find it necessary to refresh the system, and this can be done by the hot spinal douche and subsequent frictions.

In the next series of cases I will, as far as possible, give my ideas concerning the cause of chorea and the best method of preventing its development.

MEDICAL PROGRESS.

CALOMEL AS A DIURETIC.—Led on by the accidental observation that, in a case of dropsy, small repeated doses of calomel induced diuresis of high grade, JENDRÁSSIK exhibited the same drug in seven cases of heart disease in which diminished urinary secretion and static œdema were present. The maximum amount of urine passed daily under this treatment varied from four to eighteen pints, and averaged over nine pints. The maximum once attained, the amount passed gradually declined. Three grains of powdered calomel, three to five times daily, was the quantity usually given. It was found that large doses were inefficient, as they produced diarrhœa, while in the smaller doses, subjective metallic taste and other symptoms gave evidence of the absorption of the drug. It is interesting to note that a period of at least one and sometimes two or more days elapsed between the commencement of the treatment and the occurrence of diuresis.—*Centralb. f. d. ges. Therap.*, February, 1886.

"OPUSCULA PRACTICA."—In Part VI. of *The Asclepiad* Dr. Richardson refers to a remedial agent which he believes will play as useful a part in surgery as the ethylates and "colloids" originally introduced by him. This is oxalic ether ($C_6H_{10}O_4$), a colorless liquid, sp. gr. 1.090, boiling at 183° C., having a pleasant odor, but a decidedly biting taste. It dissolves readily in alcohol and in ethylic ether; it is also soluble in water to the extent of four per cent., but after a time water decomposes it, alcohol and oxalic acid being formed. Potash and soda solutions convert it into alcohol and oxalates of the bases, whilst ammonia solutions convert into alcohol and oxamide. When administered hypodermically, oxalic ether is decomposed at the point where it is introduced, and acts there perhaps exclusively, the action being to coagulate the albuminoid structures, and to produce almost painlessly a free and dry eschar, without marked constitutional disturbance, unless used in excess. Dr. Richardson looks upon oxalic ether as a destroyer of tissue rather than a caustic, and believes it will prove of service in application either by the brush or by needle injection for the removal of morbid vascular growths. It is prepared by the action of oxalic acid upon absolute alcohol.

A solution of one drachm each of camphor and spermaceti in two fluidounces of rhigolene is recommended as useful when applied on cotton-wool to burns. The evaporation of the liquid is said to induce instant relief from pain, and there is left a thin film of camphor and spermaceti covering the injured surface. Dr. Richardson also calls attention to the much overlooked value of sponge as a poultice carrier, especially for mustard. After the mustard paste has been made of a smooth and even consistency, it should be taken up on a clean sponge, the sponge laid in the centre of a soft white cloth, the corners of which are tied, and the smooth convex side of the sponge is then applied to the surface of the skin. The mustard sponge, warmed again by the fire and slightly moistened, can be applied two or three times, and remains useful for several hours. The sponge can afterward be easily cleaned in warm water.

HYDROTHERAPY IN CEREBRAL RHEUMATISM.—The following conclusions are embodied in a recent thesis by DR. H. DUPRÉ:

Hydrotherapy should be employed in cases of cerebral rheumatism with hyperpyrexia and delirium, with or without suppression of articular inflammation.

The state of the pulse, the temperature, and the nervous phenomena are the symptoms upon the presence of which treatment is instituted, and hesitation is not permissible in view of the danger to which the patient is exposed.

General baths are to be preferred to other methods of treatment. In acute cases the temperature of the bath may range between 88° and 68° F., usually beginning at the high temperature, which is slowly diminished by the addition of cold water to the bath.

No absolute contraindications of this method exist, but the possibility of resultant congestions, pneumonia, pleurisy, and syncope should be borne in mind.—*Revue de Thérapeutique*, January 15, 1886.

MAURY'S OINTMENT.—Under this name, an unctuous solid was first formulated and introduced into the Philadelphia Hospital, some eight years ago, by DR. MAURY, then a visiting physician of that institution, for the external healing treatment of sores, ulcers, etc., in general, and as especially serviceable in external affections of the skin dependent upon venereal origin. Since that time, in the medical practice of the hospital referred to, it has been constantly employed by the resident physicians, with a more than ordinarily uniform success.

The original formula contained simple cerate (Ceratum, U.S.P.) as the diluent, and not cosmoline, as hereafter mentioned:

℞.—Nitrate of mercury ointment . . ℥j.
Powdered rhubarb,
Powdered opium . . . āā ℥ss.
Cosmoline . . . . q. s. ad ℥j.

Triturate the rhubarb and opium together with the cosmoline, until a perfectly smooth, homogeneous product is obtained. Then admix with it the citrine ointment, after having previously rubbed the same with about one fluidrachm of glycerin to remove any granulation present, using in the latter process a bone spatula.

The ointment, when freshly made with cosmoline as the diluent, is a soft, unctuous, greenish-brown solid, readily melting at the temperature of the body, and capable of being absorbed by the skin. It changes rapidly, on exposure to air, to a very deep brown color. The partial change of chemical nature, as evidenced by the change of color, does not appear to affect the medical qualities of the article in question, as every-day usage has fully demonstrated that the old ointment is as efficacious as the new.

Its mode of application is somewhat peculiar and worthy of especial mention. The part to which the ointment is to be applied must first be poulticed with a hot "Labarraque poultice," that is, a poultice of flaxseed meal, made with hot Labarraque's solution, instead of the hot water ordinarily used. After remaining on for awhile, the poultice is removed, and frequently takes with it portions of dead tissue. The skin is then carefully dried, the ointment spread upon soft lint and applied twice a day, or varying according to the severity of the case until the sore, is healed.—*Am. Journ. of Pharmacy*, Feb. 1886.

CHRONIC CHLOROFORM INTOXICATION. — During thirty two days, PAUL BERT daily induced chloroform intoxication of thirty minutes' duration in a fifteen pound dog. The narcosis was effected by the administration of 150 grains of chloroform in 24 gallons of air, and usually occurred in from ten to twelve minutes. At first the animal struggled actively against the inhalation, and exhibited a violent stage of excitement; but, as time went on, this stage gradually disappeared, as did also the resistance. On the twenty-sixth day the chloroform was withheld, and at the usual time of the experiments the dog began to whine "like an ætheromaniac deprived of his narcotic," and this condition continued during the entire night. From the third day of the experiment the dog ate but little, and from the twelfth day on he was markedly somnolent, but responded when called, and drank much. During the thirty-two days he lost fourteen per cent. in weight, and during the latter part of this period developed conjunctivitis and perforation of the cornea. Neither albumen, sugar, nor chloroform were at any time present in the urine. The animal died on the thirty-second day during narcotization, and an examination revealed fatty degeneration, most marked in the liver, heart, and kidneys.—*Centralb. f. klin. Med.*, January 2, 1886.

PREVENTIVE INOCULATION OF YELLOW FEVER.—According to the *Siglo Medico* of December 13, Dr. Meyrignac, of Panama, is inoculating for yellow fever, which is very prevalent among the workmen and employés of the Canal Company. Like Dr. Carmona, he employs the sediment of the urine of yellow fever patients, which contains the zoöspores of the peronospora lutea, and injects it, dissolved in distilled water, with a Pravaz's syringe. Three hundred Mexicans were inoculated before the epidemic of 1884, and not one has died. Inoculation is generally followed by an abortive attack of yellow fever, the symptoms being benign, slight, incomplete, and of short duration. This modified yellow fever seems to confer complete immunity from a second attack. The Government of Mexico has recommended the practice, despite the opposition of its medical advisers.—*London Medical Record*, January 15, 1886.

THE PHOSPHORUS TREATMENT OF RICKETS.—The following is a report by DR. BOAS on the treatment of rickets with phosphorus. Twenty cases of rickets of different degrees were treated in this way. Of these twenty children, twelve had the breast temporarily, only four somewhat longer than half a year, and eight were brought up by hand. As substitutes for the mother's milk, various kinds of infants' food were used —in one case Swiss milk. In six cases, the conditions of the dwellings were most unfavorable. The phosphorus was prescribed in daily doses of one to two teaspoonfuls of an emulsion of one centigramme (one-fifth of a grain) of phosphorus to 100 grammes (3½ ounces), during a period of from one to three months. At the same time, an appropriate diet was given. The effects of this treatment on the ossification and general functions were highly satisfactory. Twelve patients after three months' treatment were able to stand and to walk with comparative safety; in others the effects were less speedy, but an increasing firmness of the bones was evident. Dentition passed very favorably, without undue disturbances, notwithstanding the rapid succession of teeth. In one case of spasm of the glottis, improvement took place eight days after the commencement of the treatment. The general health of the patients was in every instance benefited. In two cases, injurious effects were observed in consequence of overdosing; instead of one to two teaspoonfuls of the emulsion, a dessertspoonful daily having been given by mistake. In one case after eight days' continued use of such large doses, want of appetite, pain, fever, and swelling of the inframaxillary region, with the characteristic signs of diffuse phlegmon, set in. The abscess was opened, after a fortnight's fomentations, by incision, and a teaspoonful of pus mixed with blood was discharged. The incipient phosphorus-periostitis was arrested, and the patient soon recovered. In the second case, a child (three years of age) had already taken five bottles of the emulsion, equal to five centigrammes (five-sixths of a grain) of phosphorus apparently without injury and with evident improvement of the general condition. Then, as in the first case, phosphorus-periostitis manifested itself; and, on opening the abscess, rough necrosed bone, denuded of its periosteum, was discovered by the probe. At the same time, the child complained of violent pain in the epiphyses of the hands, thighs, and legs; this patient also made a favorable recovery. In both of these cases, phosphorus mixed with saliva had entered into the open alveoli. In conclusion, Dr. Boas points out the beneficial influence of even minute increasing doses of phosphorus on the nutrition of the bones; but at the same time he enjoins great caution, lest overdosing may take place.—*The Practitioner*, February, 1886.

AMYL NITRITE AS A PHYSIOLOGICAL ANTIDOTE IN COCAINE POISONING.—SCHILLING records a case of severe cocaine poisoning, in which, after the intragingival injection of two drops of a twenty per cent. solution of this drug, motion and sensation entirely disappeared. Complete amaurosis and deafness were present. The patient could swallow well, and called to her husband, who was absent, complaining of cold and darkness. Schilling, recognizing the condition as one due to contraction of the cerebral vessels, exhibited nitrite of amyl. The face of the patient immediately became suffused, and she cried, "Now it is light again." After three inhalations she was in condition to reply correctly to all questions, and soon after returned to her home.—*Centralb. f. d. gesammte Therap.*, Feb. 1886.

THE ACTION OF THE ALKALINE METALS AND OF THE ALKALINE EARTHS.—CURCI finds that, in cold-blooded animals, potassium paralyzes first the nervous and muscular systems, and finally the heart. In mammals the heart is first affected.

Sodium first increases nervous and muscular excitability, producing convulsions, and tetanus of the respiratory muscles. Later appears paralysis, first of the brain, then of the cord, and finally of the heart.

Lithium induces the same phenomena as does sodium.

Calcium causes an anæsthesia, progressing centrally from the extremities, with cardiac paralysis when exhibited in very large doses.

Magnesium exerts effects very similar to those produced by calcium, except that the heart is affected much earlier.—*Centralb. f. klin. Med.*, Jan. 2, 1886.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication. When necessary to elucidate the text, illustrations will be furnished without cost to the author. Editor's Address, No. 1004 Walnut St., Philadelphia.

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SATURDAY, MARCH 6, 1886.

LAPAROTOMY IN WOUNDS INVOLVING THE INTESTINES.

IN the present number of THE MEDICAL NEWS we give the concluding portion of an interesting paper by PROF. DENNIS on "Laparotomy," the chief object of which is to recommend this operation in cases in which it is reasonable to suspect that a wound or injury of the wall of the abdomen is accompanied by perforation or rupture of the bowel. As we understand the author, he would have the abdomen opened for the purpose of diagnosis and of treatment much more frequently than has yet been common. It is well known that the extent of an injury inside of the cavity of the abdomen can at best be only suspected from the symptoms which follow it, and it would appear reasonable—now that exploratory openings in the abdomen can be made with such comparative safety—to give a patient with either a gunshot or stab wound of the abdomen what may be his only chance of recovery, by cutting down and learning the exact nature of the injury so as to apply the proper surgical remedy.

Prof. Dennis first discusses the applicability of laparotomy to stab wounds of the abdomen and argues for its frequent employment. In studying his argument it does not escape our attention that his own statistics do not furnish the fullest support to his views. However, we agree with his conclusions in regard to the treatment of these wounds. It is now a year since we expressed the opinion that stab wounds of the abdomen may often be regarded as properly subject to laparotomy. At that time we cited the successful case of Tiling, published in 1884, in which a stab wound of the stomach was treated by suturing, after laparotomy. This result is very encouraging. But the same can hardly be said of other reported cases in which the belly was opened, no visceral injury was found, and death followed. These suggest that we must not let our zeal outrun our discretion. Let the belly be opened without timidity, indeed, but also without temerity. Countless stab wounds of the abdomen have been followed by recovery, and many more may yet end as happily; so that the case is not to be thought so desperate as to warrant subjecting a patient to the real risks of laparotomy, except when there is more evidence that the bowel has been punctured than coldness, localized pain, and feeble and rapid pulse.

The case is somewhat different in regard to gunshot (or pistolshot) wounds, for these are so usually fatal that the faintest suspicion of injury of the intestine would seem to justify laparotomy. The opinion of Otis, that gunshot wounds of the small intestine are invariably fatal if left to themselves, has never been discredited, even in the case reported by Dr. Andrews, of Chicago, in which a pistolball, shot into the abdomen above the navel, was passed from the anus a week later; for there is nothing to show that it went into the small intestine. The rule is that gunshot wounds involving the bowel will cause death unless surgical interference averts the catastrophe, and any other result is as rare as it is fortunate. It is further highly probable that any gunshot wound of the abdomen will involve the bowel, and these facts constitute a warrant for surgical interference which is strongly supported by the successful operations already reported, and which is not at all impaired by the operations which have failed to save the patient's life.

In regard to opening the belly after the infliction of violent blows upon it, or after the passage over it of the wheels of vehicles, followed by symptoms of laceration or bursting of the bowel, we think the greatest caution should be exercised, and the cases cited by Prof. Dennis lead us to this conviction. On the whole, we think no more can be said than that it may be regarded as justifiable to operate in a case in which there is not a very strong probability that the injury would prove fatal without respect to any rupture of the intestine.

In conclusion, we would reassert the opinion expressed a year ago in these columns, in regard to the entire class of injuries of the abdomen in which the bowel may have been pierced or ruptured: that active interference may, and should, be instituted much oftener than it is. We cordially commend the conclusions of Prof. Dennis, with the arguments on which they rest, to the thoughtful consideration of our readers.

FOOD INSPECTION.

THE supervision of the food supplies of the people is one of the most important obligations of a munici-

pality. While the price and the quality in a measure must be left to the ordinary operations of trade, the law should intervene to prevent adulterations, and the manufacture and sale of any articles intended for human consumption that are injurious to health. In order to carry out this object the law should define what is meant by adulteration in its various forms, and designate what is unwholesome food, and advise the course of procedure in condemning, withdrawing from the market, and disposing of any "diseased, or unsound, or unwholesome food, or food unfit for the use of man."

The organization necessary for administering such regulations, as well as many other measures connected with the preservation of the public health, already exists in many States in the form of a State Board of Health. Already in several instances the powers of State Boards have been enlarged so as to include the supervision of food supplies. By vesting authority in a central board it is not intended to relieve local boards of the responsibility of supervising food of a perishable character, such as meat, fish, game, vegetables, etc., which require daily inspection; but on the contrary to lend a moral support, and furnish a means of coöperation in effecting a common purpose.

While the main object of legislation against adulteration is the protection of the public health, it yields a further advantage by its economic results. This fact is prominently set forth in connection with the administration of the Massachusetts food-inspection law. Of the articles liable to adulteration, such as milk, butter, spices, vinegar, cream of tartar, and some drugs, consumed in 1884, of the value of $15,000,000, five per cent., or $750,000, were saved to consumers through the enforcement of the act.

In most European countries, laws both general and municipal have long been in existence, which regulate the manufacture or sale of articles of food. In this country most States have statutes relating to special articles of food. Some of them have a purely commercial object; others are intended for the protection of the public health. Beyond enacting a law prohibiting the importation of damaged and adulterated tea, which has been productive of good results, the National Government has done little to insure the purity of food. The bill of Senator Edmunds recently introduced in the United States Senate is intended to supply this deficiency. The passage of the bill and the strict enforcement of the law thus enacted will go far toward securing the purity of staple articles of food, and in establishing the reputation of our products in foreign markets, and as a consequence will be very beneficial to our export trade.

Among the States in which the importance of food inspection has been recognized may be mentioned Massachusetts, New York, and New Jersey. They have recently adopted carefully prepared laws for the prevention of the adulteration of food and drugs. These laws have been engrafted upon those of the State Board of Health. One of their objects is the protection of trade by preventing adulterations; but the vital purpose is to take cognizance of adulterations which are injurious to health, and to prevent the sale of deleterious articles of food.

For the execution of the law the appointment of inspectors and analysts is necessary. Test offices should also be established and provided with the necessary apparatus for the chemical and microscopical examination of all articles submitted by the inspectors, and also by the public, as everyone should have the privilege of ascertaining the composition of any suspected article of food.

Adulteration has been applied to a great variety of foods, beverages, and drugs, but the practice is common in only a comparatively small number of articles, and to these special attention should be directed. Chief among these are milk, butter, cheese, spices, vinegar, sugar, ground coffee, tea, oils for consumption, cream of tartar, spirits, and various sorts of drugs. Meats, fish, and vegetables, and other perishable articles, will require constant supervision. The examination of the flesh of animals should be specially critical. Provision should be made for examining all cattle immediately before killing, and for inspecting the meat before it is exposed for sale in the markets. If all slaughter-houses were placed under sanitary control, and the business of slaughtering concentrated in abattoirs, this work would be rendered practicable and efficient.

It is the practice in London to condemn the flesh of animals infected with certain parasites, as the *trichina* in pork, the *cysticerci* in pork and beef, and *flukes*, which infest the livers of animals; that of animals suffering from fever or acute inflammatory diseases, as rinderpest, pleuro-pneumonia, and the fever of parturition; that of animals wasted by lingering sickness, such as phthisis; that of animals which have died from accident or from natural causes; and also all meat that is tainted or that is sufficiently decomposed to be discolored or to have a putrid smell. The flesh of animals that have been exhausted, excited, or tortured before death has frequently been found to be unwholesome.

Under certain conditions sausages are a most dangerous food on account of a virulent poison which is produced by a sort of modified putrefaction. Poisonous effects are generally observed in connection with sausages which are mouldy and soft in the interior, and which emit a strong-smelling odor. Other kinds of animal food when in a decayed or mouldy condition may occasionally produce similar

effects. Fish, poultry, and game must be examined for signs of decomposition.

Fruit and vegetables must be objected to mainly on account of advanced decomposition. Mouldy food of all kinds is dangerous and should be condemned. The testing of canned goods for poisonous substances, and the examination of various articles of food requiring analysis must be performed in the laboratory, the duty of the inspector being confined to procuring samples of suspicious articles for investigation.

A uniform law in all the States, covering the subjects above suggested, would have a powerful effect in ridding the market of spurious and unwholesome articles of food. The purposes of the law could be secured by notification and warning, and by prosecutions and penalties, and in some cases by confiscation of the condemned articles.

DREAMS.

IN a recent article upon dreams, we referred to the views that WUNDT holds upon the subject. A consideration of sleep in regard to its etiology precedes that of dreaming. Wundt regards it as certain that sleep belongs to periodical biologic processes, and consequently its most intimate source or origin is to be sought in the central nervous system. As to where the hypothetical centre of sleep is located, we do not know; nevertheless, according to the normal conditions of sleep we must admit that this centre is none other than the organ of aperception itself. Aperception, of course, will not be confounded with perception by the reader. Perception is the simple cognizance of a sense impression—it is a message received at the central office; but in aperception consciousness or reflection is exercised—the message is not only received, but read and understood. The phenomena which appear as a consequence of sleep prove that from the aperception centre the effects emanate which involve the entire central nervous system, presenting the distinct character of effects of arrest. They are manifested by the depression of cardiac and respiratory movements, by lessening of all the secretions, and diminution of reflex excitability; the psychophysical side of these central arrests consists in this, that exterior irritants of moderate energy cannot be perceived, especially cannot be subjected to aperception, and that probably in their turn the reproductions also gradually disappear.

The profoundness of sleep can in some degree be judged by the energy of the irritant necessary to awaken the sleeper. It is proved by experiment that sleep is most profound shortly after it begins; and that it then is replaced by drowsiness. At first, sleep is probably in most cases a state of complete absence of consciousness, such as occurs in syncope, which appears to be only sleep occurring in abnormal circumstances. The arrest of central functions which causes the beginning of sleep, determines besides a series of secondary alterations, which may also be considered the effects as well as the partial phenomena of sleep. Very probably these alterations have as their intimate origin the arrest of the innervation of the vasomotors, and of that of respiration, because all the consecutive phenomena are notably increased by disturbance of respiration. It is probable, too, that arrest of the two nervous centres produces disturbance in the circulation, and also a similar condition in the alternative exchange of materials in the brain.

While new researches are necessary for the determination of some of these points, we can conceive that there will be developed by the conditions that have been mentioned states of irritation which during sleep triumph over the existing arrests, thus suppressing the state of complete absence of consciousness in order to produce in its place a consciousness modified by the particular conditions in the midst of which it is manifested. This modified consciousness is the condition of dreaming. "Since in dreaming representations are reproduced and sensorial impressions are made objects of perception and subjects of aperception, the functions of consciousness appear reëstablished in the dream." The consciousness is modified in two respects: first, the reproduced representations have the character of hallucinations; and, second, the aperception is so changed that the appreciation of facts of memory shows essential alterations.

Wundt regards most of dream representations as really illusions, since they emanate from sensorial impressions which, though weak, continue during sleep. An inconvenient position taken by the sleeper causes the representation of painful work, perilous ascent of a mountain, etc. A slight intercostal pain becomes the point of an enemy's dagger, or the bite of an enraged dog. Difficulty in respiration is fearful agony caused by nightmare, the nightmare seeming to be a weight rolled upon the chest, or a horrible monster which threatens to stifle the sleeper. An involuntary extension of the foot is a fall from the dizzy height of a tower. Flying is suggested by the rhythmic movements of respiration. Further, "those subjective visual and auditory sensations which are represented in the waking state as a luminous chaos of an obscure visual field, by humming and roaring in the ears, and especially subjective retinal sensations, have an essential *role*," according to Wundt. "There are shown to us innumerable birds, butterflies, fish, multicolored pearls, flowers, etc." But if there be some cutaneous irritation, these visions are usually changed into caterpillars or beetles crawling over the skin of the sleeper.

The sleeper sometimes dreams of his appearing on the street, or in society, only half dressed; the

innocent cause is found in some of the bedclothes having fallen off. Wundt quotes from Scherer the statement that those dreams characterized by the presence of water, usually result from the sleeper's bladder being full, and the pressing need of urinating. "Sometimes he sees wells open before him; sometimes he is upon a bridge, and is looking down upon the water, or, perhaps, in virtue of an entirely natural association, sees floating in every direction a vast number of pigs' bladders." An inconvenient position of the sleeper, a slight hindrance to respiration, or interference with the action of the heart, may be the cause of dreams where one seeks an object without being able to find it, or has forgotten something in starting upon a journey. The movements of respiration may suggest to the sleeper, as previously mentioned, flying, but this flight may be objective, and instead of himself flying, he sees an angel descending from the heavens, or a luminous chaos where birds are swiftly moving.

The representations of dreams having sensorial origin may have mingled with them those which arise solely from the reproduction of past memories. Thus parents or friends cut off in the flower of life, ordinarily appear in dreams because of the profound impression which their death or burial has made; "hence the general belief that the dead continue during the night their intercourse with the living."

THE FORMATION OF A NATIONAL SOCIETY FOR CLINICAL MEDICINE.

IN view of the unquestionable advantages which have followed the organization of special societies in the different departments of medicine, we are informed that it has been determined to organize a society devoted to the interests of clinical medicine and pathology. Preliminary meetings have been held in New York during the winter, at which the project was thoroughly discussed, and favorably considered. A preliminary organization was effected on December 29, 1885, and a committee, consisting of Drs. Francis Minot, of Boston, Wm. H. Draper, of New York, William Pepper, of Philadelphia, R. Palmer Howard, of Montreal, Alfred L. Loomis, of New York, William H. Welch, of Baltimore, Francis Delafield, of New York, and James Tyson, of Philadelphia, were appointed to notify those who were chosen for original members of their election, and to make the necessary arrangements for the first meeting, which is to be held in Washington on June 16th and 17th.

By the formation of this Association, each of the natural divisions or specialties of medicine will now be represented in this country by a special society. This new organization enters upon a wide field of usefulness and begins its career under the most promising auspices.

SOCIETY PROCEEDINGS.

NEW YORK COUNTY MEDICAL ASSOCIATION.

Stated Meeting, February 15, 1886.

THE PRESIDENT, C. A. LEALE, M.D., IN THE CHAIR.

DR. FREDERIC S. DENNIS read a paper on

LAPAROTOMY IN THE TREATMENT OF PENETRATING WOUNDS AND VISCERAL INJURIES OF THE ABDOMEN.

(See pages 225 and 253.)

DR. JOSEPH D. BRYANT said that he had listened with much interest and great individual benefit, to the paper of Dr. Dennis. On account of the expression of his views on previous occasions, it was hardly necessary to say that he was in favor of laparotomy; but it was pertinent to ask, What is laparotomy in the sense in which it presents itself to the profession? There are two distinct forms of the operation: First, exploratory laparotomy; and, second, laparotomy in its entirety. Having given the definitions of these two operations, Dr. Bryant remarked that it is a common custom to characterize as laparotomy the simple exploratory incision.

This operation, he said, he would employ far more frequently than is at present the case; believing, as he does, that when performed under proper conditions it exposes the patient to no unusual danger. In illustration, he referred to Lawson Tait's wonderful success in opening the peritoneal cavity. Exploratory laparotomy is a justifiable operation. It is perfectly simple and easy to open the abdomen; but when it comes to making a thorough examination of the various viscera, arresting hemorrhage at all bleeding points, suturing the intestines, and performing the toilet of the peritoneal cavity, it is a very different matter. This is a procedure which requires a long time—from one hour to two or three. Dr. Bryant said that he called attention to this point in order that the gravity of the operation of laparotomy in its entirety might be fully understood. It is certainly one, therefore, which is attended with a very considerable amount of danger.

Whether shock is present or not, it is justifiable to perform exploratory laparotomy. Whether the exploratory incision is to be made in the median line or not, depends on the direction of the violence producing the wound. If this is toward the median line, the incision may be made in the latter; but if the direction is from the median line, the incision is to be made at the seat of the external wound.

As to the rate of mortality when there is a protrusion of a viscus through the abdominal wound, he has found that statistics show that from 25 to 30 per cent. of all cases recover when the intestine, or other part, has been sutured and returned to the abdominal cavity, and the external wound closed. In penetrating gunshot wounds of the abdomen, treated on the expectant plan, the statistics of the Crimean war show that 7½ per cent. of the cases recovered.

It was remarkable, Dr. Bryant continued, how gradually laparotomy had been led up to, from the days of Fallopius, in the seventeenth century. He then said that he would not consider as a case of laparotomy in its

entirety, one in which there were found no injuries of the intestines or other viscera. If this were the case, it was merely an exploratory laparotomy.

Speaking of symptoms, he said in regard to shock, that it is a principle pretty well established that penetrating gunshot wounds of the abdomen, provided they do not cause hemorrhage or the injury of nerve trunks, are not followed by much shock. Severe shock and subnormal temperature generally indicate hemorrhage. Therefore, as Dr. Dennis had remarked, severe shock is no contraindication for laparotomy.

In all cases in performing this operation it is necessary that the surgeon should surround himself with all the conditions which will tend to afford the patient the best possible chance of recovery. Dr. Bryant said, in conclusion, that there was one fact about which there was no doubt, and that was, that hemorrhage is a very important symptom, and that it is absolutely necessary that every bleeding point should be satisfactorily secured. Not infrequently the slightest oozing becomes changed to profuse hemorrhage as soon as the abdominal contents are returned to their places, and the cavity closed up. Experiments which he had made on dogs (shooting them in the abdomen, and then performing laparotomy) had further convinced him of the extreme importance of hemorrhage in gunshot wounds of the abdominal cavity.

DR. E. G. JANEWAY said that the absence of hepatic dulness is a good general guide as to the existence of perforation of the intestines; but there are a certain number of cases which simulate this condition. Thus, in a case of typhoid fever under his observation, in which, on account of this symptom, perforation was supposed to have taken place, it was found at the autopsy that the resonance over the hepatic region was not due to this cause, but to the tilting of the liver. In regard to the operation of laparotomy, one possibility had occurred to him. Eberth, in his experiments on dogs, had found that by immersing the abdomen in a serum bath of 98° thrombosis and peritonitis could be prevented. Possibly, therefore, it might be advisable to operate on human subjects in the same way. It would hardly be safe to use bichloride of mercury as the antiseptic under the circumstances, but a warm saline solution might be employed for the bath.

DR. J. W. S. GOULEY said that he believed that the views expressed this evening were sound. The operation of laparotomy is justifiable when we have reason to believe that the hollow viscera have been injured. He then related two cases which had come under his own observation. The first was that of a young soldier twenty-two years ago, who suffered from a bayonet wound which passed completely through his body. It was not clear what organs had been injured in its course; but nothing was done, and the patient got well without a bad symptom.

The second case was one in which there was a pistol-shot wound which also passed completely through the body. It injured the right lobe of the liver and the lower lobe of the right lung; and bile, mingled with the pus, flowed freely out of both openings. In this case, also, recovery took place under the expectant plan of treatment. During the war he had, in fact, seen several cases which resulted successfully in a similar manner. At the same time, if he were to meet with such cases to-day, he did not hesitate to say that he should prepare himself to open the abdomen.

DR. H. M. BIGGS said that, in regard to the loss of liver dulness, he had met with a case which showed that this could not be relied upon as an infallible sign of perforation. The patient was suffering from peritonitis, and when the absence of hepatic dulness was detected, it was naturally supposed that perforation had occurred. There was no operation, and the patient died, when it was found at the autopsy that the cause of the resonance in the hepatic region was the fact that the intestines had forced themselves between the liver and the abdominal walls, and that no perforation had taken place.

CINCINNATI ACADEMY OF MEDICINE.

Stated Meeting, February 15, 1886.

THE PRESIDENT, SAMUEL NICKLES, M.D., IN THE CHAIR.

DIURETIC MEDICINES.

DR. S. NICKLES, in introducing the discussion of this subject, gave a brief description of the physiological action of the kidneys, sufficient to illustrate the mode of action of diuretics, as far as this has been ascertained. Some diuretics, he said, do not increase the secretion of urine in the normal state of the organism; but in certain forms of dropsy, especially those dependent upon heart disease, they display very remarkable power, often in a few days causing a very copious flow of limpid urine. On account of the abundance of the urine, they have been called hydragogue diuretics. It has been shown by experimental investigations that all such diuretics, in moderate doses, cause a more vigorous action of the heart, in consequence of which the blood-pressure becomes increased. Usually as soon as the blood-pressure approaches the normal, the urine increases. Hence their action is due not to any special influence on the secreting structures of the kidney, but to the increased general blood-pressure, which augments the velocity of the blood-flow in the kidneys. At the present time they are called indirect diuretics. They are indicated in all cases of dropsy in which the general blood-pressure is abnormally low, which is always the case in cardiac dropsy. They are contraindicated in all cases in which the blood-pressure is abnormally high, or in which the pulse is hard and tense. To this group of diuretics belong digitalis, squills, caffeine, apocynum, convallaria, adonis, and several others.

From the indirect diuretics must be carefully distinguished those medicines which increase the urine by a direct influence upon the secreting structures of the kidney—the direct diuretics. These augment the quantity of urine in healthy persons, although they cannot then produce a very abundant flow of urine. In certain forms of dropsy, however, they often cause a copious secretion. The action of these diuretics is attended by hyperæmia of the kidney. This was shown in certain experiments by Cohnheim and Roy, in which they injected urinary substances into the vascular system and carefully noted the changes produced in the volume of the kidneys. Uniformly the size of the kidneys became increased, showing an augmented quantity of blood in

the renal vessels. No increase of the blood-pressure in general resulted, and hence the dilatation of the arterioles of the kidneys was due to the greatly increased activitity of the renal epithelium, excited by the presence in the renal blood of urinary substances.

The hyperæmia produced by direct diuretics may become excessive, if very large doses are used. Thus oil of turpentine, copaiba, cubeb, cantharides, and others, may cause a very scanty flow of albuminous and bloody urine. Doubtless the flow of blood in the renal vessels becomes greatly retarded, and then, in consequence of nutritive changes of the epithelium and capillaries, other constituents of the blood, besides water, urea, uric acid, escape through the damaged structures.

The direct diuretics are contraindicated in all inflammatory diseases of the kidneys. They may be used in any form of dropsy, if the kidneys are healthy; but in cardiac dropsy are usually inefficient unless combined with the indirect diuretics. In some forms of kidney disorder the direct diuretics are effectual remedies; thus it is often observed that hæmaturia is quickly arrested by minute doses of oil of turpentine. On account of the severe disorder of the renal circulation which follows large doses of oil of turpentine, cubeb, copaiba, and cantharides, these remedies have been called stimulant or irritant diuretics. In diseases of the mucous membrane of the urinary passages produced by low organisms, copaiba, cubeb, and oil of turpentine are of decided utility. They render the urine aseptic, so that it does not easily undergo putrefaction. Hence it is supposed that their utility in catarrhal affections, and especially in gonorrhœa, is to some extent due to a destructive influence on the low organisms, and they have therefore been called antiseptic diuretics.

Not all the direct diuretics, when given in large doses, produce irritation of the kidneys. The saline diuretics, especially the acetate, citrate, and bitartrate of potassium, may be given in very large doses, especially if they are dissolved in much water. The action of all these salts is the same upon the kidney, which is readily accounted for by the fact that they are all converted into the carbonate of potassium in the blood. They are supposed to exert some effect upon the circulation and temperature in febrile diseases, and hence have been styled refrigerant diuretics.

Dr. Nickles did not propose to discuss the action of the special members of the groups of diuretics, or to point out the special indications for their therapeutic use; but he desired to call attention to a medicine, which, as yet, is little employed, but is of great utility in some forms of dropsy—namely, the resin of copaiba. Numerous careful observers have found that it often exerts a very decided diuretic action in cases of ascites, in which other diuretics are not usually very efficient. In a case of moderate ascites with œdema of the lower extremities, occurring in a patient with enlarged liver and jaundice, who had become very anæmic from profuse hæmatemesis, the resin of copaiba, in doses of about eight grains three times a day, in several days greatly increased the flow of urine, and in about two weeks caused the absorption of all the serum which had accumulated in the areolar tissue and peritoneal cavity.

DR. A. RAVOGLI called attention to the very important part the nervous system plays in the mechanism of this function. Some time ago he took part in a course of experiments on this subject. A large dog was curarized, the abdomen was opened and the ureters divided, and tubes inserted so as to collect the urine as it passed out. Acetate of potassium was then injected into the circulation. The flow of urine rapidly increased. Shortly after this the minor sympathetic nerve was cut. As a consequence the urine again rapidly increased in flow, so that it no longer dropped from the orifices of the tubes, but escaped in a small stream. The current from an electric battery was then passed through the divided ends of the nerve and the flow of the secretion was at once checked. When the battery was removed the urine again increased. This, the speaker believed, demonstrated the controlling influence of the sympathetic over the secretion of urine.

It is now know that albuminuria is sometimes present in cases in which there is no lesion of kidney structure. This is illustrated in the albuminuria of pregnancy. The balsam of copaiba acts largely upon the lesser sympathetic nerve, controlling the vasomotor circulation. This is shown by the fact that eruptions frequently follow its use. Such eruptions are the result, not of the irritant action of copaiba on the gastric mucous membrane, but of its action on the vasomotor nerves. While the balsam of copaiba is capable of producing this irritant action on the stomach, it manifests its action on other nerves also, and it is through its action on the splanchnics that it has its diuretic action.

DR. J. L. CLEVELAND reported a case illustrative of the proper use of the indirect diuretics in which the result was admirable. A patient had recently come to his office suffering from an aggravated attack of asthma, breathing with great difficulty; his lower limbs were œdematous, and the action of the heart was tumultuous. After he had examined the patient, he felt that he had a very unfavorable case before him and made a guarded prognosis. After a walk of only a few squares, the heart's action was so tumultuous as entirely to mask the valve sounds. He prescribed $\frac{1}{10}$ grain doses of digitalin. The next day, when he called on his patient he was astonished at the rapidity with which the remedy had acted. The heart had been toned up, its action was regular, its sounds distinct and a large amount of urine had been passed. The breathing was much more easy, and in a few days, with no other remedy, the trouble entirely disappeared. In proper cases there is hardly a remedy which will act with so great certainty.

DR. J. G. HYNDMAN did not believe that we can have an albuminuria without a lesion of the kidney. There are cases of albuminuria which are produced as a result of outside influences, as in the albuminuria of pregnancy referred to. In these cases the albuminuria is due to the pressure of the uterus or some of its appendages on the bloodvessels of the kidney, causing in it a passive hyperæmia, but it does not occur without alteration of kidney elements. A proof of this view with regard to the production of this form of albuminuria is seen in the numerous experiments that have been made, as by the ligation of the renal veins.

DR. RAVOGLI replied that his remark with reference to the albuminuria of pregnancy had been made in order to illustrate the fact that the occurrence of albuminuria does not of necessity imply the existence of a renal or cardiac disease. Of course, the albuminuria of preg-

nancy is a result of pressure, and consequent retardation of the blood-current, just as it is in the ligation of the renal veins.

DR. R. W. STEWART raised the question whether the albuminuria of pregnancy is due to the pressure of the gravid uterus or whether there is not in reality a preëxisting disease of the kidneys in all these cases. It is a peculiar fact, he said, that albuminuria occurs in only certain cases of pregnancy and not in all, as it might be expected to do if it were the result of pressure.

DR. THAD. A. REAMY stated that he had no doubt that albuminuria in a large number of cases is due to pressure. The fact of its occurring in only a certain proportion of cases can be accounted for by the fact that the pressure is not the same in degree in all cases of pregnancy. He added that he had recently seen cases of albuminuria in pregnant women cured within a few days by the administration of the muriated tincture of iron and the milk diet. Nowhere, however, have we a better illustration of the proper use of the indirect diuretics than in cardiac asthma, as in the case reported by Dr. Cleveland.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, February 19, 1886.

THE PRESIDENT, T. G. RODDICK, M.D., IN THE CHAIR.

UTERINE FIBROID.

DR. TRENHOLME exhibited a large uterine fibroid which he had removed the previous week from a woman aged thirty-three. Patient, who was married and had borne children, had suffered from symptoms of fibroid for some sixteen years, and as the hemorrhages were becoming more severe had requested that an operation should be performed. Dr. Trenholme consented and performed the operation. The tumor was encircled by a wire écraseur one inch above the os uteri and removed; there was considerable hemorrhage which was difficult to control. The patient never rallied from the operation, but died seven hours after from shock.

SARCOMA OF SPLEEN IN A DOG.

DR. WYATT JOHNSTON exhibited a specimen of angeio-sarcoma removed from a dog. The tumor weighed four pounds and was continuous with the upper end of the spleen substance. The dog suffered from abdominal dropsy, for which he was tapped, and died of peritonitis a few days subsequently.

LARGE URINARY CALCULUS.

THE PRESIDENT presented a large uric acid calculus which he had recently removed from a man aged sixty-nine, by the lateral operation. The stone weighed three and one-quarter ounces. The patient had suffered from symptoms of stone for five years, and had been frequently sounded without result. The man recovered from the operation without a bad symptom.

DERMOID CYST.

DR. WM. GARDNER presented two specimens, and briefly narrated the cases:

CASE I. *Dermoid cyst containing a bunch of hair, two well-formed incisor teeth and one bicuspid tooth attached to a piece of bone, also a fourth tooth in another part of the cyst wall.*—The fluid contents contained a large quantity of fat, and on cooling looked like drippings of meat. The other ovary was an aggregation of cysts and was also removed. The patient, an unmarried lady of thirty, had noticed the tumor for only four months; she had had several attacks of pelvic pain in the side on which was the tumor. She made a rapid and easy recovery, leaving for home on the eighteenth day.

CASE II. *Tait's operation.*—Uterine appendages removed from a case of uterine myoma. Both ovaries consisted of a mass of smooth cysts and were three times the normal size. The tubes were healthy. The myoma was as large as a child's head. The patient had been married three years and had never been pregnant. She was much blanched by hemorrhage and watery discharges which had lasted for five years. She had suffered from fever, abdominal distention, and profuse metrostaxis after the operation, but at the date of the meeting (eleventh day) was doing perfectly well.

MALIGNANT STRICTURE OF THE ŒSOPHAGUS.

DR. GEORGE ROSS showed a specimen of cancer of the œsophagus, the following being the principal facts in the clinical history: A man æt. fifty-four, six feet four inches high, and who had been immensely powerful, was admitted into the hospital with intense dysphagia and in a state of great emaciation and weakness. There was an intense fetor of breath, and he had had a severe cough for some time with a copious similarly fetid purulent expectoration. He was intemperate and was in the habit of drinking raw spirits. The difficulty of swallowing had gradually developed during more than a year, until of late even fluids were forced down with the greatest difficulty and straining. There had never been any vomiting or regurgitation of food. An œsophageal bougie of soft, flexible rubber and of almost the largest size, was twice passed its full length without meeting with any special obstruction. It slid down with ease and not the slightest force was used. The withdrawal of the bougie was followed by the escape of horribly foul air from the patient's mouth, and the instrument itself was smeared with stinking pus. Physical examination of the chest gave signs of cavity in left apex and of softening deposit with cavity localized in right mammary region. He rapidly became enfeebled and died in about a month from asthenia, continuing to the end to swallow a large quantity of fluids every day, and there was never seen any regurgitation. The diagnosis had been epithelioma of the œsophagus involving the tube in such a way as to produce all the phenomena of stenosis and yet permit of considerable patency of the lumen; secondary cancer of the lungs with gangrene. The autopsy showed an epithelioma of unusually firm texture situated just below the level of the cricoid cartilages and extending for about two inches. It encircled the œsophagus and the stricture was almost impermeable. It was only after repeated efforts that a No. 2 flexible (urethral) catheter could be insinuated through it. In the apex of the left lung was a large cavity containing a considerable slough lying loose within it—the chamber was excessively fetid. The upper part of the lung was firmly adherent to the diseased portion of the œsophagus, but *no communication* could be shown between the pharynx and the apex-

cavity. In the front of the right lung was a mass of cancer which had softened centrally.

Dr. Ross directed attention to some points of the case. He thought the disease might here have originated from the habit of drinking copiously of raw spirits. The absence of all regurgitation was a remarkable feature, considering the high situation of the growth and the tightness of the stricture. He also asked the question: "What course was taken by the bougie?" The tight, firmly organized stricture must have existed for a long time; such a large instrument could not possibly have passed through within two or three weeks of the man's death. The bougie was too large, the space too narrow, and the stricture too high for it to have bent upon itself. Could it have passed into the cavity in the apex of the lung? If so, there must have existed a direct and free communication with this part from the pharynx, which avenue had been subsequently shut off by adhesive inflammation. Except on the latter hypothesis, he was at a loss to explain the facts given above.

MALIGNANT DISEASE OF RECTUM TREATED BY EXCISION AND COLOTOMY.

DR. GEORGE E. FENWICK read a paper on the operative treatment of malignant disease of the rectum, with cases. He began by remarking that the origin of cancer is still an unsolved mystery. He said that some look upon cancer as being at first a local disease, produced by long-continued irritation or accidental injury. The disease begins at one point while the rest of the body is apparently healthy. They believe that the constitutional implication is secondary to the local disease, as cancer first spreads by infiltration of the structures in its immediate neighborhood, and when the lymphatics are involved is distributed to all parts of the body. Others, again, assert that certain people are predisposed to cancer, and that without the predisposition no amount of local injury or irritation will produce this disease.

Dr. Fenwick thought that in many cases the disease was of purely local origin, but that in some there was an hereditary predisposition. He regarded it as more than a mere coincidence that many members of the same family are occasionally affected, and that it may show itself in several generations. He held, however, that if it could be shown that cancer could be arrested by early surgical removal without subsequent recurrence, the position of the localists would be much strengthened. If there is a time when cancer is purely local, the necessity for early surgical interference becomes imperative. Although recurrence is the rule after the extirpation of cancerous growths, still cases do occasionally occur in which no recurrence is observed, and some of the cases related by the reader of the paper bore evidence to the truth of this statement.

Cancer of the rectum arises in a very insidious manner, and in many cases it is almost impossible to obtain a correct clinical history regarding the length of time the disease has existed. The earliest symptoms are, smarting, itching, and general discomfort about the rectum, after defecation and exercise there is a dull aching pain more or less constant. The patient's rest is broken and his general health in consequence suffers. As the disease advances defecation becomes more difficult and painful, the bowel is never properly emptied, and blood is frequently passed. If not relieved by operation, the patient rapidly fails and dies of exhaustion. The duration of the disease is from eight months to three or four years. Dr. Fenwick went on to remark that if the disease is low down, early extirpation should be practised, and that as one could get above the seat of the disease, excision should be performed in preference to the palliative operation of colotomy. The operation of excision, though often difficult, was not dangerous, and often relieves the patient for years. In women the operation is much easier than in men on account of the roominess of the pelvis and the presence of the vagina, enabling the operator more easily to reach the disease. In most of the cases he had sacrificed the external spincter, but after a time the patient had considerable retentive power. In his last case he preserved the external sphincter, with benefit to the patient.

CASE I. *Excision of rectum.*—Patient a woman, æt. fifty-eight, who had a cancerous ulcer near the external sphincter, about the size of a half-dollar. The disease had existed several months. The spincter was involved. No enlarged glands could be made out. Excision advised and operation performed in May, 1876. A circular incision was made round lower end of bowel, at some distance from edge of growth, and the lower two inches of the bowel dissected away. There was considerable hemorrhage and the vessels were tied separately. The bowel was removed with the knife. Patient had no recurrence and died some three years ago.

CASE II. *Colotomy.*—Girl, æt. twelve, came to hospital January, 1876, for what was thought to be syphilitic disease of rectum. Nodular condition of bowel as far as finger could reach. Antisyphilitic treatment of no avail. The disease increased and the nodules became ulcerated. The bowel becoming much obstructed, lumbar colotomy was performed with great relief to patient. The patient recovered well from the operation, left the hospital in a few weeks, and was lost sight of.

CASE III. *Colotomy.*—Mr. L. æt. sixty-two, French Canadian, admitted to hospital Nov. 7, 1877. Had for years suffered from piles, for which he had been treated some twelve years before by the application of nitric acid. About end of previous June began to have pain in the rectum, which was greatly increased on going to stool. Defecation had lately become difficult and relief could only be obtained by tepid water injections. On examination a huge growth was found obstructing the bowel near its lower end, the finger could not be passed above it. Lumbar colotomy performed. Easy and rapid recovery; patient much relieved, and lived in comparative comfort till the following June, eight months.

CASE IV. *Excision of rectum.*—Mrs. N., seventy years of age, consulted Dr. Fenwick for what she supposed to be dysentery. She had great tenesmus and a large mass of the bowel protruded. On examination a cancerous mass was seen involving the entire circumference of the anus and extending up the anterior wall of the bowel for some two inches. As the finger could easily reach above the mass, excision was advised. The operation was performed August 6, 1878. Three and a half inches of the bowel were removed, together with the external sphincter. The patient made a good recovery. This old lady died on April 10th of last

year (1885), having lived six years after the excision. The cancer never returned; patient died of some heart affection.

CASE V. *Excision of rectum.*—Mr. A., farmer, æt. fifty-six, consulted Dr. Fenwick, Jan. 1880, for what he supposed to be piles. Had suffered for the last five months. On examination a cancerous mass was found a little above the anus, extending completely round the bowel, more of the mass being in the anterior portion. The finger could easily be passed beyond the disease. Operation January 22, 1880. Nearly four inches of bowel removed. On separating the bowel from the tissue of the bladder, the right vas deferens was cut. There was not a great deal of hemorrhage. The external sphincter was removed. After cutting away the diseased bowel the healthy bowel was brought down and stitched to the anus. In both these last cases the posterior wall of the bowel was incised as far back as the coccyx before removal. The patient rapidly recovered and lived in comparative comfort for three years, when the disease returned high up and patient became rapidly emaciated and died.

CASE VI. *Excision of rectum.*—Man, æt. sixty, admitted to hospital June, 1882, with cancer of anterior wall of rectum a little above the anus. Excision performed, but great difficulty was experienced in separating the bowel from the prostate gland and bladder, which were found to be involved in the disease. A portion of the bladder was removed with the bowel. The patient died of exhaustion four days after the operation.

CASE VII. *Excision of rectum, and colotomy.*—Man, æt. forty-five, consulted Dr. Fenwick in November, 1883, for a bleeding tumor of the rectum. He had for several years suffered from "rectal disease," which was thought to be piles, for which he had taken all the advertised quack remedies. On examination a fungoid mass with a hard base was found in the posterior wall of the rectum. It extended up the bowel a couple of inches and involved almost one-third of the circumference of the gut. Excision advised and the operation performed November, 1883. There was considerable hemorrhage and the bowel was ligatured before removal. The patient's recovery, owing to loss of blood, was slow. The tumor was examined by Dr. Osler and pronounced to be a well-marked case of villous tumor. Patient did well for about a year, when he began to have considerable trouble with his bowels—had great difficulty in relieving himself. On examining him it was found that the disease had returned and was now distinctly epitheliomatous. Excision was again advised, and another operation performed in January, 1885. About four inches of the bowel were removed and some glands which were involved. The patient recovered rapidly and returned to his business, but the disease again returned higher up, and symptoms of obstruction appearing, colotomy was performed in July, 1885. This relieved him, but he gradually sank and died early in the present year (1886).

CASE VIII. *Excision of rectum.*—Mrs. S., æt. forty-two, consulted Dr. Fenwick for some affection of the rectum for which she had suffered for the last six months. Was troubled with painful and difficult defecation and passed imperfectly formed feces. On examination, found a cancerous ulcerated growth about as large as a penny on the anterior wall of the bowel one inch above the anus, beyond this several large glands could be felt. Excision advised and operation performed on the 3d of February, 1886. The whole bowel was removed and the external sphincter preserved—about three and a half inches taken away. Diseased glands all removed. The end of the healthy bowel was brought down and stitched to the anus. In separating the anterior wall of the rectum from the vagina, the latter structure was torn slightly, but the rent was immediately sutured. The peritoneum, where the parts between the bowel and vagina were separated, prolapsed into the wound but was not wounded. The patient rapidly recovered, and when last seen had good retentive power.

In operating, Dr. Fenwick remarked that after the first incision he chiefly used his fingers to separate the bowel from the surrounding structures.

CORRESPONDENCE.

EXTRAUTERINE CHANGED TO INTRA-UTERINE PREGNANCY BY ELECTRICITY.

To the Editor of THE MEDICAL NEWS.

SIR: In this age of ohms, ampères, and volts, scepticism as to the power of electricity is in the highest degree unreasonable—not to say reprehensible. If electricity, transported thirty-five miles by telegraph wire, can move an ordinary locomotive engine from one place to another, surely the same power can cause an embryo to move a few inches along the *Chemin de Fallopius!* It would appear so to Doctors Garrigues, Mundé, and Stabler. Upon the communication of the last-named gentleman in THE MEDICAL NEWS of Feb. 27, I should like to make just two criticisms.

1. The patient was delivered of a four months' fœtus on the 13th of December, and on the 18th of November—within a month—the sound had been passed into an apparently normal uterus, to the interior of which applications of iodine and nitrate of silver were made. It is, I believe, invariable in cases of extra-uterine pregnancy for the uterus and its mucosa in the early months to undergo a development proportionate in some degree to the growth of the ovum. The decidua vera may form a velvety, highly vascular layer a quarter of an inch in thickness. In the cases of extra-uterine pregnancy which I have dissected, this enlargement has always been present, and it was beautifully shown in several specimens recently exhibited by Dr. Formad, at the Philadelphia Pathological Society.

2. We are asked to believe that some time between Dec. 4th, the date of the last application of galvanism, and Dec. 13th, the date of delivery, the embryo was transferred from the tube into the uterine cavity, and it is suggested that the hypertrophied walls of the tube under the stimulus of electricity effected the removal.

That it could have been a pure tubal pregnancy seems unlikely from the age which the ovum had attained, and from the very perfect state of placenta and appendages. So far as we have observed, there is in these cases *thinning*, not hypertrophy, of the muscular coat of the tube. If within the proximate end of the tube, surely there would have been, at the middle of the third month, considerable enlargement of the uterus.

I am, yours, etc.,

E. Y. D.

NEWS ITEMS.

CHICAGO.

(From our Special Correspondent.)

RUSH MEDICAL COLLEGE.—The forty-third annual commencement exercises of Rush Medical College occurred on the 16th instant. One hundred and fifty-six students received the ordinary degree of Doctor of Medicine. Five gentlemen received the honorary degree, namely, Drs. D. A. Huffield and W. M. Hanna, of Illinois; Dr. Hoeber, of Hamburg, Germany; Dr. J. A. Standiland Grant, of Cairo, Egypt; and Dr. Daniel Hack Tuke, of London.

About 410 students have been in attendance upon the College during the past term.

In the evening of the 16th, at the Palmer House, the Faculty of the College gave a banquet to the alumni, over four hundred of whom were present.

Hereafter students in this College must, in order to graduate, take a special course in the Laboratory of Physiology and Pathology. The Laboratory has been prepared for this work and Dr. A. J. Ochsner, of Wisconsin, has been appointed Demonstrator in this department. The course will consist of fifteen or more lessons, which will be devoted to the study, with the microscope, of normal and morbid specimens of tissues; of urinary sediments, sputa, microörganisms, etc.

A POST-GRADUATE MEDICAL SCHOOL has been organized to combine the clinical and practical laboratory teaching of Rush College, the clinical work of the Central Dispensary of West Chicago, the Presbyterian Hospital, the Eye and Ear Infirmary, and, to some extent, the Cook County Hospital. The sessions of the school will probably occur in June, July, and August, and take the place of the Practitioners' Course which has heretofore been carried on each spring by Rush College. It is not expected that any didactic lectures will be given, but that the teaching will be practical and clinical entirely. An announcement of the school will be issued in the near future.

COOKING FOR INVALIDS.—The importance now attached to diet in the treatment of disease necessitates especial care in the preparation of food for invalids. Physicians are aware that such preparation is practically impossible to the ordinary cook in a private family, not only because she has no time apart from her regular duties, but because she is, as a rule, unwilling and incompetent to work by weight and measure, watch and thermometer. Especially is this the case with the partially pre-digested foods, which a labor-saving cook can easily make to seem right, while they are in fact valueless. It is also difficult, even for trained nurses, from their lack of general experience in cooking, which cannot be supplied by the few lessons they may receive while under training.

To meet this difficulty, the New Century Guild of Working Women, 1131 Girard Street, Philadelphia, offers to prepare and deliver to order all kinds of foods prescribed by physicians, including all forms of predigested nourishment.

The New Century Guild is a branch of the New Century Club, whose name is sufficient guarantee of its conscientiousness in its undertakings.

THE GERMAN MEDICAL CONGRESS.—The fifth Congress "*für innere Medicin*," will take place at Wiesbaden from April the 14th to the 17th, under the presidency of Dr. Leyden, of Berlin. The programme of papers and discussion is as follows: At the first sitting, Wednesday, April 14th, the Pathology and Therapeutics of Diabetes Mellitus, introduced by Drs. Stokvis (Amsterdam), and Hoffman (Dorpat); second sitting, Thursday, April 15th, the Operative Treatment of Pleural Exudation, Dr. Fräntzel (Berlin), and Dr. Weber (Halle); third sitting, Friday, April 16th, the Therapeutics of Syphilis, Dr. Kasson (Vienna), and Dr. Neisser (Breslau). Other communications will be made on Antipyresis, by Dr. Riess, of Berlin; on Ptomaines, by Dr. Brieger; on Blood-pressure in Morphia-narcosis, by Dr. Fick, of Würzburg, etc.

H. J. BIGELOW, M.D., has resigned his position as surgeon to the Massachusetts General Hospital. His resignation has been accepted by the Trustees, and he has been made Surgeon Emeritus, with five beds placed at his disposal.

ANOTHER STUDENT FOR PASTEUR.—It is announced that the city of Amsterdam will send Dr. Saltet, of the hygienic laboratory, to Paris, to study M. Pasteur's methods of inoculation for rabies. The expenses will be paid by the municipal funds.

THE FIFTEENTH CONGRESS OF THE GERMAN SURGICAL SOCIETY will be held in Berlin, from April 7th to 10th. Among the subjects put down for discussion are: tuberculosis (continued); the results of operation on complicated harelip; operations on the urinary bladder, including high and median lithotomy. Information may be obtained from Professor Gurlt, Bernburger Strasse, 15–16, Berlin.

EXTIRPATION OF THE KIDNEY.—On Monday, February 1st, at the London Hospital, Mr. Frederick Treves removed from a woman, aged thirty-five, the left kidney, together with both ovaries—the kidney for hydronephrosis, the ovaries for multilocular cystomata. The patient, we understand, is doing remarkably well.

DR. LUCHSINGER, Professor of Physiology in Zurich, has died at Meran. It is expected that Dr. Gaule, who has been lecturing for him, will be elected.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE NAVY, FOR THE WEEK ENDING FEBRUARY 27, 1886.

CLARK, J. H., *Surgeon*.—Detached from the "Hartford," on the reporting of his relief, Medical Inspector Bradley.

BRADLEY, MICHAEL, *Medical Inspector*.—Ordered by steamer of March 10 from New York to Aspinwall, thence to Panama, and to the "Hartford," as the relief of Surgeon J. H. Clarke.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM FEBRUARY 23 TO MARCH 1, 1886.

SPENCER, WM. G., *Captain and Assistant Surgeon*.—Ordered for duty at Fort Yates, Dakota Territory.—*S. O. 17, Department of Dakota*, February 23, 1886.